MAURY'S CHARTS.

METEOROLOGICAL OFFICE
METEOROLOGICAL OFFICE LIBRARY
DUPLICATE

MAURY'S WIND & CURRENT CHART

3rd EDITION 1852. NO. 2. SERIES A.

Note

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind	
a fresh breeze	*ditto with squalls*
a moderate breeze	*do*
a light breeze	*do*
a very light breeze	*do*
light airs	*do*
light variable airs	*do*
calm	

Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.

A moderate breeze varying during the day from N. by the westward to S.W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals, by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them thus, 80 shew the temperature of the water.

The colours represent the seasons; Black, Winter, or the months of December, January and February; Green, Spring, or the months of March, April and May; Red, Summer, or the months of June, July and August, and Blue, Autumn, or the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season; if black, December, if green, March, if red, June, or if blue, September. A broken line - - - - - represents the second month of each season, as January, April, July or October, and a dotted line .... the third or last month, as February, May, August or November, according to the colour of the season.

The names of men-of-war, or Government vessels, are in Roman letters; the names of merchant vessels in Italics.

The heavy lines that run from E. to W. are intended to show the average limits of the N. E. Trades for each month. The flat face figures along these lines show the number of vessels whose records have been consulted in assigning these limits for each 5° of Longitude. Thus 8, 9, 5, along the three Blue lines between 60° and 65° West, denote that the upper limits of the N. E. Trades between these two meridians are assigned according to the records of 8 vessels in Sept., 9 in Oct. and 5 in November; that the mean limits of their Southern or Equatorial edge for the same months are ascertained from the records of 10, 12, and 10 vessels for each month; and from 12, 4, and 4 Black for the winter months; and so on according to the color for the season and character of the line for the month.

Longitude 68° West from 63° Greenwich 67° 66° 65° 64° 63° 62° 61° 60° 59°

...act of Congress in the year 1850 by M. F. Maury in the Clerk's Office of the District Court of the southern district of New York.

UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART.
3D EDITION 1852. NO. 3. SERIES A.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
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light airs — do
light variable airs — do
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The colours represent the seasons; Black Winter, or the months of December, January and February, Green, Spring, or the months of March, April and May; Red, Summer, or the months of June, July and August, and Blue Autumn, or the months of September, October and November. The tracks by their character, represent the months. An unbroken line represents the first month of each season; if Black, December, if Green March, if Red June, or if Blue, September. A broken line represents the second month of each season, as January, April, July or October, and a dotted line the third or last month, as February, May, August or November, according to the colour of the season.
The names of men of war or Government vessels are in Roman letters; the names of merchant vessels in Italics.
The heavy lines from E. to W. show the mean limits of the N.E. Trades for each month. The flat face figures along these lines show the number of records used to establish these limits between each pair of meridians. Thus 22 on the broken Red line between 25 and 30° W. shows that the northern edge of the N.E. Trades has been obtained from the mean of 22 observations between these two meridians in July, and so on for the other months according to the color and the character of the line.
AZORES
CAPE VERDE ISLANDS
PART OF AFRICA

MAURY'S
WIND & CURRENT CHART.
SHEET NO. 1.
Note
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The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them thus 80 show the temperature of the water.
The colours represent the seasons: Black, Winter, or the months of December, January and February. Green, Spring, or the months of March, April and May. Red, Summer, or the months of June, July and August, and Blue, Autumn, or the months of September, October and November. The tracks by their character, represent the months. An unbroken line ______ represents the first month of each season: if Black, December if Green, March, if Red, June, or if Blue, September. A broken line __ __ __ represents the second month of each season, as January, April, July or October: and a dotted line .... the third or last month, as February, May, August or November, according to the colour of the season.
The names of men of war or Government vessels are in Roman letters: the names of merchant vessels in Italics.
SPAIN
PORTUGAL
MEDITERRANEAN SEA
ALGEIRS
MOROCCO
AFRICA
GULF OF GUINEA
Bight of Benin
Bight of Biafra
Gibraltar
C. Trafalgar
C. St. Mary
Sevilla
United States 1847

SPAIN
PORTUGAL
MEDITERRANEAN SEA
ALGEIRS
MOROCCO
AFRICA
Bight of Benin
Bight of Biafra
GULF OF GUINEA
Long. West from Greenwich
Long. East from Greenwich
UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART.
3D EDITION 1849. NO. 4. SERIES A.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
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light airs — do
light variable airs — do
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The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them thus 80 shew the temperature of the water.
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The names of men of war or Government vessels are in Roman letters the names of merchant vessels in Italics.

FOX CHANNEL
HUDSONS STRAIT
LYONS CHANNEL
BUTTONS BAY
HUDSONS BAY
JAMES BAY
NORTH AMERICA
UPPER CANADA
LOWER CANADA
UNITED STATES
MAINE
MASSACHUSETTS
RHODE I.
CONNECTICUT
NEW-YORK
N. JERSEY
MAURY'S
WIND & CURRENT CHART
3rd EDITION 1849. NO. 5. SERIES A.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze
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a light breeze
a very light breeze
light airs
light variable airs
calm
ditto with squalls
do
do
do
do
do
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MAURY'S
WIND & CURRENT CHART
3D EDITION 1849. NO. 6. SERIES A.
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides, the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze ... ditto with squalls
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a light breeze ... do.
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light airs ... do.
light variable airs ... do.
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Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and and decimals by numerals placed by the side of the arrow.
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The figures with a line under them, thus, 80 shew the temperature of the water.
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The names of men of war or Government vessels are in Roman letters, the names of merchant vessels in Italics.
UNITED STATES HYDROGRAPHICAL OFFICE
GREENLAND
DAVIS STRAIT
LABRADOR
CUMBERLAND STRAIT
METAINCOG
FROBISHERS STRAIT
HUDSONS STRAIT
NORTH ATLANTIC OCEAN
GULF OF ST. LAWRENCE
ANTICOSTI
NEW FOUNDLAND
NEW BRUNSWICK
NOVA SCOTIA
PRINCE EDWARD I.
CAPE BRETON
MAINE
River St. Lawrence
Bay of Fundy
STEAM LANE TO AMERICA
STEAM LANE TO EUROPE
Staten Hook
C. Chudleigh
C. Resolution
Ungava Bay
St. Johns
Sable I.
Magdalen Is.

... of Congress in the year 1850 by M. F. Maury in the Clerks Office of the District Court of the southern district of New York.

Eng. by Sherman & Smith

MAURY'S
WIND & CURRENT CHART
3d EDITION 1849. NO. 6. SERIES A.
Note
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A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degree of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 60 shew the temperature of the water.
The colours represent the seasons; Black, Winter, or the months of December, January and February; Green, Spring, or the months of March, April and May; Red, Summer, or the months of June, July and August, and Blue, Autumn, or the months of September, October and November.
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FÆROE ISLANDS
SHETLAND IS.
ORCADES or ORKNEY IS.
NORWAY
SWEDEN
DENMARK
Jutland
Kattegat
The Skagerack
BALTIC SEA
NORTH SEA
SCOTLAND
HEBRIDES or WESTERN IS.
IRISH SEA
ENGLAND
Bristol Channel
English Channel
NETHERLANDS
LONDON
PARIS
FRANCE
BAY of BISCAY
SPAIN
PORTUGAL

MAURY'S WIND & CURRENT CHART

3rd EDITION 1849. NO. 8. SERIES A.

Note

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind			
a fresh breeze		*ditto with squalls*	
a moderate breeze		*do.*	
a light breeze		*do.*	
a very light breeze		*do.*	
light airs		*do.*	
light variable airs		*do.*	
calm			

Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.

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A moderate breeze varying during the day from North by the westward to S.W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them, thus 60 show the temperature of the water.

The colours represent the seasons; Black, Winter, or the months of December, January and February; Green, Spring, or the months of March, April and May; Red, Summer, or the months of June, July and August, and Blue, Autumn, or the months of September, October and November.

The tracks by their character represent the months. An unbroken line ________ represents the first month of each season; if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line ___ ___ ___ represents the second month of each season; as January, April, July or October; and a dotted line.............. the third or last month; as February, May, August or November, according to the colour of the season.

The names of men of war or Government vessels are in Roman letters; the names of merchant vessels in Italics.

UNITED STATES HYDROGRAPHICAL OFFICE
PILOT CHART
OF THE
NORTH ATLANTIC
BY
M. F. Maury, L. L. D. Lieut. U. S. Navy.
Superintdt. of U.S.N. Observatory
WASHINGTON
Compiled from Materials in the Bureau of Ordnance and Hydrography
Commodore Charles Morris
Chief of Bureau
1853.
SERIES C. NO 1.
2nd Edition; Enlarged and improved with data coordinated by J.M.Brooke, Passed Mid.n U.S.Navy.
Diagram A.
Total Winds for Nov. Oct. Sept.
Total Winds for Dec. Jan. Feb.
Total Winds for Sept. July June
Total Winds for March April May
Diagram B.
Note.
The object of the Pilot Chart is to show how the winds blow in each month and in every 5 square of the Ocean.
The information embodied here has been collected from the sea journals of American vessels, some of the journals going back as far as the year 1810.
The masters and owners of merchantmen have not only placed their old logs at my disposal for this and other purposes, but they have also undertaken, in a manner deserving of all praise, to collect information, and to keep for this office, according to a prescribed form, a journal of their voyages. Their cooperation has been of great service, for without it, I could not have carried on my undertaking. I am also under many obligations to my brother officers in the Navy from whom I have likewise received much valuable assistance.
In collecting from the logs, materials for this chart, the day has been divided into three parts of 8 hours each. If the wind be variable, it is entered on the chart as from that point of the compass from which it most prevailed. But if calms prevail chiefly for any one of the 8 hours, a calm is entered on the chart.
Therefore to see the records for how many days have been examined for any square, it is only necessary to divide by 3, the whole number of winds and calms in any wind-rose.
Thus in the wind-rose, between 30 and 35 N. 70 and 75 W. we see in the South East corner of the circumscribed square, (middle number,) 302 winds, and in the S.E. quadrant of the inner circle, (middle number,) 9 calms. The S.E. corner and quadrant show the total winds and calms for the Spring months; April is the middle Spring month; therefore the log books examined for this wind-rose, contained the records of vessels which in different years have been 103⅔ days in it during the month of April.
Again the middle Nos. 84 and 1 in the S.W. corner and quadrant show that the records which have been examined for the month represented by these numbers include in the different years only 28⅓ days; these Nos. shew the winds and calms for July, the middle Summer month.
Hence we infer that many more vessels are in the habit of passing through this section of the Ocean in April than in July.
The winds as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.
See diagrams A and B and the Explanation on sheet No. 2.
M. F. Maury Lt. U.S.N.
National Observatory,
Washington, Nov. 10th 1853
West from Greenwich

UNITED STATES HYDROGRAPHICAL OFFICE
PILOT CHART
OF THE
NORTH ATLANTIC
M. F. Maury. L. L. D. Lieut. U. S. Navy.
National Observatory, Washington
1853.
New Edition corrected 1857.
SHEET NO. 2.
SERIES C.
EXPLANATION.
Diagram A.
Diagram B.
M. F. Maury Lt. U.S.N.

UNITED STATES HYDROGRAPHICAL OFFICE
PILOT CHART
OF THE
COAST OF BRAZIL
by Lieut. M. F. Maury. U. S. Navy.
National Observatory, Washington.
1854.
Second Edition 1852.
Note
This chart is on the plan of Pilot Chart North Atlantic. The only difference between the two, is, that in the North Atlantic, the wind-roses occupy each a space of Ocean 5° square. On this the wind-rose occupies a space of 1° of Longitude by 2° of Latitude.
The arrangement of the Months, Courses, Winds and Calms, is the same on both charts.
M. F. Maury
Total Winds for Nov. Oct. Sept.
Total Winds for Dec. Jan. Feb.
Total Winds for Augt. July June
Total Winds for March April May
West from Greenwich
Longitude West from Greenwich

PILOT CHART

OF THE

SOUTH ATLANTIC

BY

M. F. Maury. LL.D. Lieut. U. S. Navy.

Compiled at the NATIONAL OBSERVATORY from materials in

The Bureau of Ordnance and Hydrography

Commodore Lewis Warrington.

Chief of Bureau.

BY Lieut. H. N. Harrison, P^d M^d Geo. B. Balch, " " H. K. Davenport, " " W^m H. Murdaugh, U.S.N.

NO. 1. SERIES C.

1853.

Note

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 10° and 15° S. and 30° and 35° W. The figures in the N.E. corner of the circumscribed square, show that in this square, there have been examined 541 records of the winds in December, 415 in January and 316 in February. In the N.E. quadrant of the inner circle we see that it was calm 2 times in addition to the 316 winds of February and that there was no calm either for Dec. or Jan.

These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the broken radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this broken radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S., are entered as from E., and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 11. 1. 3. between the two outer circles, mean that 11 of the 541 winds in Dec., 1 of the 415 in Jan., and 3 of the 316 in Feb., were North winds.

In Dec. the wind blew also 6 times from N.N.E.; 19 N.E.; 71 E.N.E.; 86 E.; 115 E.S.E.; 195 S.E.; 13 S.S.E.; 19 S.; 0 S.S.W. and so on.

Proceeding towards the centre, the next inter-circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 471 for March; 538 for April; and 350 for May; exclusive of 13, 9, and 2, calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec; the second numbers for Jan. and so on.

The third space between the circles contains the winds for the three summer months in the same order June July and August between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sept. and the inner for November. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this; as many logs as could be obtained, have been examined, the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours; has been entered as one wind.

Thus in the square between 10 and 15° S. & 30 and 35 W. we see in the S.W. corner 331 winds, and in the S.W. quadrant no calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean: consequently, all vessels passing through this square in the month of June, were in it, 110⅓ days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B is for the convenience of the navigator. Make a fac simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8 good. Within 4 points and 10 miles of distance, she makes 7.1 good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

M. F. Maury Lt. U.S.N.

National Observatory Dec. 11th 1850.

Unfrequented part of the Ocean
UNITED STATES HYDROGRAPHICAL OFFICE.
PILOT CHART
OF THE
SOUTH ATLANTIC
by Lieut. M.F. Maury. U.S. Navy.
National Observatory Washington.
1853.
SHEET NO. 2.
Series C.
Diagram A
Diagram B.

WIND AND CURRENT CHART

OF THE

NORTH ATLANTIC

BY

M. F. Maury, L.L.D. Lieut. U.S. Navy.

Superint[dt]. of U.S.N. Observatory

WASHINGTON

Compiled from Materials in the Bureau of Ordnance and Hydrography

Commodore Charles Morris.

Chief of Bureau

Drawn by Lt. Benj[n]. S. Gantt U.S.N.

1852.

THERMAL SHEET NO. 1 SERIES D.

EXPLANATION.

The figures are the temperatures of the water at the surface and at the place of observation, without any correction or error among the various Thermometers used; (they were all Fahrenheit.)

The figures that stand thus (82): that is, those that are to be read from North to South as we stand at the West margin of the chart, are the observed temperatures for the Spring. Those in black, for March (the first month); those in blue, for April (the second month); and those in red, for May. (the last month.)

The figures that stand upside down, thus: 69, or those which are to be read from East to West when we stand North side of the chart, show the Summer temperatures: that is; the black, for June; blue, for July; and red, for August.

The figures that stand thus: (54) or those which have to be read from South to North as we stand on the East side of the chart, are the temperatures for Autumn. The black standing for the first (Sep.), the blue, for the second (Oct.), and the red, for the last (Nov.), month of the season.

The figures that stand thus: (70), in the usual way, are for the Winter temperatures; ie, black, for Dec., blue, for Jan., and red, for Feb.

Hence it will be preceived that the position of the figures show, the seasons; thus; Spring (82); Summer (02); Autumn (82); Winter (70); and the color the month; that is, the first month of each season, as March, June, Sept. and Dec. has its temperatures in black; the second, as April, July, October and January, in blue; and the last, as May, August, November, and February, in red.

The isotherms are drawn for every 10° from 80° to 40° inclusive. These lines begin on the Western side of the chart, and as we follow them thence we are to understand — take the isotherm of 60° for example — that to the right of that line the temperature of the water is above 60°; and to the left side, below 60°.

As each of the four seasons is represented by an arrangement of figures peculiar to itself for the temperatures, so each is represented by a peculiar system of lines for its isotherms: thus, a continuous line represents the isotherm of 80°, and its color, the month. If it be black, it is for the first month of the season: if blue, for the second; and if red, the the third. Thus the line ________ stands for 80° in Summer. If the line be black, it is the isotherm for 80° in June; if blue, it is for 80° in the month of July; and if red, it is the isotherm for 80° in August. The last month of each season being always in red, as the first is in black.

If the line be broken, thus — — — it is the isotherm of 70°. Broken with one dot —.—.—.— it is for 60°; with two dots —..—..—..— it is for 50°; and with three dots —...—...—...— it is for 40°.

ISOTHERMS FOR THE FOUR SEASONS.

Temperatures and Isothermal lines—*For Spring*

80
70
60
50
40

For Summer

80
70
60
50
40

For Autumn

80
70
60
50
40

For Winter

80
70
60
50
40

1st month of each of the 4 seasons in Black.
2d do. . . . . Blue.
3d do. . . . . Red.

M. F. Maury Lt. U.S.N.

National Observatory Nov. 5th 1850.

MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 2 SERIES D.
Temperatures and Isothermal lines _ For Spring
80 70 60 50 40
For Summer
80
70
60
50
40
For Autumn
40 50 60 70 60
For Winter
80
70
60
50
40
1st month of each of the 4 seasons in Black
2d do. Blue
3d do. Red
UNITED STATES HYDROGRAPHICAL OFFICE
CARIBBEAN SEA
PORTO RICO
VENEZUELA
BARCELONA
CUMANA
ARAWACAS
DEMARARA
SURINAM
CAYENNE
PORTUGUESE GUAYANA
Trinidad
Barbadoes
Guadaloupe
Martinique
Bermudas Is.
July 80
May 70
Dec. 70.
March 70.
June 70.
Nov. 70
July 70.
Feby 70
Jany 70
April 70
Nov. 80
Sept. 80.
May 80
Oct. 80
April 80.
Dec. 80.
Jany 80.
June 80
March 80.
Feby 80
Long. West from Greenwich

MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 3 SERIES D.
Temperatures and Isothermal lines _ For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black
2d do. Blue
3d do. Red
UNITED STATES HYDROGRAPHICAL OFFICE
AZORES or WESTERN ISLES
CANARY ISLANDS
CAPE VERD ISLANDS
Madeira
Porto Santo
Palma
Teneriffe
Canary
Lanzarota
Fortaventura
C. Non
C. Bojador
C. Blanco
C. Verde
R. Senegal
St. Louis
Bissao
July 70
April 60
Sept. 70
June 70
Oct 70
Nov 70
Aug. 80
May 70
Dec. 70
April 70
March 70
Feby 70
Jany 70
Sept. 80
Oct. 80
July 80
Aug. 80
Dec. 80
June 80
Nov. 80
May 80
Jany 80
Feby 80
March 80
April 80
Oct 80
July 80

S P A I N
M E D I T E R R A N E A N   S E A
A L G E I R S
M O R O C C O
A F R I C A
Gibraltar
Seville
Cadiz
April 60
July 70
Oct. 70
Bight of Benin
Bight of Biafra
G U L F   O F   G U I N E A
July 80
Oct. 80
UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 4 SERIES D.
Temperatures and Isothermal lines For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black
2d do. Blue
3d do. Red

MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 5. SERIES D.
UNITED STATES HYDROGRAPHICAL OFFICE.
Temperatures and Isothermal lines — For Spring
80 70 60 50 40
For Summer
80 70 60 50 40
For Autumn
80 70 60 50 40
For Winter
80 70 60 50 40
1st month of each of the 4 seasons in Black.
2d do. " " " " " " " Blue.
3d do. " " " " " " " Red.
Chesterfield Inlet
Rankins Inlet
Nevill Bay
BUTTONS BAY
HUDSONS BAY
Prince of Wales Fort
C. Churchill
Nelsons Shoal
C. Tatnam
York Fort
Severn House
C. Henrietta Maria
FOX CHANNEL
Mill Islands
Salisbury I.
Sea Horse Pt.
Nottingham I.
C. Pembroke
LYONS CHANNEL
Mansfield I.
Charles Is.
C. Wostenholme
HUDSONS STRAIT
Mosquito Bay
Sleepers
King Georges Is.
Richmond Gulf
Belchers
Long I.
Bear I.
Bear Sands
JAMES BAY
NORTH AMERICA
UPPER CANADA
LOWER CANADA
Quebec
UNITED STATES
NEW-YORK
MAINE
Portland
Portsmouth
Newburyport
C. Ann
Salem
Boston
MASSACHUSETTS
C. Cod
RHODE I.
Providence
CONNECTICUT
New Haven
Newport
Long Island
New York
N. JERSEY

UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 6 SERIES D.
Temperatures and Isothermal lines — For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black.
2d do. Blue.
3d do. Red.
GREENLAND
DAVIS STRAIT
LABRADOR
CUMBERLAND STRAIT
FROBISHERS STRAIT
HUDSONS STRAIT
C. Chudleigh
Ungava Bay
Staten Hook
Enchanted Cape
Sandwich Bay
St. Michaels Bay
Belle Isle
C. Norman
St. Marys Is.
Pt. Manitou
North Pt.
West Pt.
ANTICOSTI
S.W. Pt.
Lobster Bay
Egg I.
Point de Monts or C. Montpellis
River St. Lawrence
GULF OF
ST. LAWRENCE
NEW FOUNDLAND
St. Georges Bay
Trinity Harbor
C. St. Francis
St. Johns
C. Race
Virgin rocks
Great Bank of New Foundland
Magdalen Is.
Chaleur Bay
NEW BRUNSWICK
PRINCE EDWARD I.
Northumberland Strait
CAPE BRETON I.
St. Peters Bank
NOVA SCOTIA
Bay of Fundy
St. Johns
Sable I.
Middle Ground
Feb. 40
Dec. 40
Sept. 60
Jan. 40
March 40
Dec. 50
Oct. 60
March 50
July 50
Aug. 60
Oct. 50
April 40
July 60
June 50
Sept. 70
June 60
March 60
Nov. 70
Jan. 60
June 70
Aug. 60
May 70
West from Greenwich

MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO.7 SERIES D.
Temperatures and Isothermal lines — For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black
2d do. " " " " " " Blue
3d do. " " " " " " Red
UNITED STATES HYDROGRAPHICAL OFFICE.
Part of GREENLAND
ICELAND
Brede Bay
Faxe Bay
C. Rekianess
Mt. Hecla 5366 ft.
Oster Jokel Volcano 5966 ft.
C. Hecla
Westman I.
Ingolfe Hofde
Storksness
Enchuysen I. according to ascribed Lat. and Long.
Rockall
Rockall Bank
Vidal Bank

FÆROE ISLANDS
SHETLAND IS.
ORCADES or ORKNEY IS.
HEBRIDES or WESTERN IS.
SCOTLAND
IRELAND
IRISH SEA
ENGLAND
Bristol Channel
English Channel
NORTH SEA
NORWAY
SWEDEN
The Skagerack
Kattegat
DENMARK
Jutland
Zeeland
BALTIC SEA
NETHERLANDS
LONDON
PARIS
FRANCE
BAY of BISCAY
SPAIN
UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART
THERMAL SHEET NO. 8 SERIES D.
Temperatures and Isothermal lines — For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black.
2d do Blue.
3d do Red.

WIND AND CURRENT
CHART
OF THE
SOUTH ATLANTIC
BY
M. F. Maury, LL.D. Lieut. U.S. Navy.
Superindt. of U.S.N. Observatory
WASHINGTON
Compiled from Materials in the Bureau of Ordnance and Hydrography
Commodore Charles Morris
Chief of Bureau.
1858.
SERIES A. NO. 1.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze ... ditto with squalls
a moderate breeze ... do.
a light breeze ... do.
a very light breeze ... do.
light airs ... do.
light variable airs ... do.
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus, 80 shew the temperature of the water.
The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August; and Blue, the months of September, October and November.
The tracks by their character, represent the months. An unbroken line represents the first month of each season; if Black December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season; as January, April, July or October; and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels are in Roman letters, the names of merchant vessels in Italics.
SOUTH AMERICA
BRAZIL
URAGUAY
LA PLATA
MARANHAM
I. of Marajo
RIO DE JANEIRO
BAY OF Victoria ESPIRITO SANTO
Buenos Ayres
RIO DE LA PLATA
Laguna Grande de los Patos
Bay of Paranagua
St. Catherines
C. St. Antonio
C. Corrientes
Port Desire
Longitude West from Greenwich

United States Hydrographical Office
MAURY'S
WIND & CURRENT CHART.
S. ATLANTIC. SERIES A.
SHEET NO. 2.
Point Toiro
Rio Grande do Norte
Parahyba
Pernambuco
C. St. Augustinho
Barra Grande
Port Calvo
Maceio
Rio St. Francisco
S O U T H
A T L A N T I C
O C E A N

MAURY'S
WIND & CURRENT CHART.
SOUTH ATLANTIC. SERIES A. NO. 3.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides, the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze
a moderate breeze
a light breeze
a very light breeze
light airs
light variable airs
calm
ditto with squalls
do
Part of the day a moderate breeze from S. W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S. E. and part of the day a light breeze from N.
A moderate breeze varying during the day from N. by the westward to S. W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals, by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessels near whose track they are placed.
The figures with a line under them thus 70 show the temperature of the water.
The colours represent the seasons: Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August; and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season; if black, December, if green, March, if red, June, or if blue, September. A broken line - - - - represents the second month of each season, as January, April, July or October, and a dotted line .... the third or last month, as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.
Congo River
Loango Bay
Ambriz
St. Paul de Loando
Benguela
Little Fish Bay
Port Alexander
Great Fish Bay
Tiger Peninsula
C. Frio
C. Cross
Walwich B.
Pelican Pt.
Ichabo I.
Angra Pequena
N A M A Q U A S
C. Voltas
Orange R.
Lamberts Cove
Saldanha Bay
Table Bay
Longitude East from Greenwich
Longitude West from Greenwich
Drawn by Passed Mid. Wm. G. Temple. U. S. N. Tracks projected by Prof. Wm. Flye. U. S. N.

MAURY'S WIND AND CURRENT CHART. SERIES A. SOUTH ATLANTIC Nº 4.

UNITED STATES HYDROGRAPHICAL OFFICE
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze — ditto with squalls
a moderate breeze — do.
a light breeze — do.
a very light breeze — do.
light airs — do.
light variable airs — do.
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from North.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degree of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them thus 80 show the temperature of the water.
The colours represent the seasons: Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November.
The tracks by their character, represent the months. An unbroken line ______ represents the first month of each season: if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line _ _ _ _ represents the second month of each season: as January, April, July or October; and a dotted line .... the third or last month: as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.
A F R I C A
MALEENDA
ZANZIBAR
KEELWA
MOZAMBIQUE
COAST OF SOFALA
INHAMBANE
FUMOS
COAST OF NATAL
COLONY OF THE CAPE
MADAGASCAR
INDIAN OCEAN
Zanzibar I.
Mafia I.
Comoro
Johanna
Mohilla
Mayotta
Aldabra Id.
Assumption I.
Cosmoledo Groupe
Glorious Isles
Port Natal
Algoa Bay
Bassas da India
Europa I.
Dutch Bank
Mauritius Shoal
Crab Id.
Elephant Shoals
Quillimane
Sofala
Delagoa Bay
Cape Corrientes
St. Lucia B.
St. Johns R.
Buffalo R.
Great Fish R.
Pt. Natal

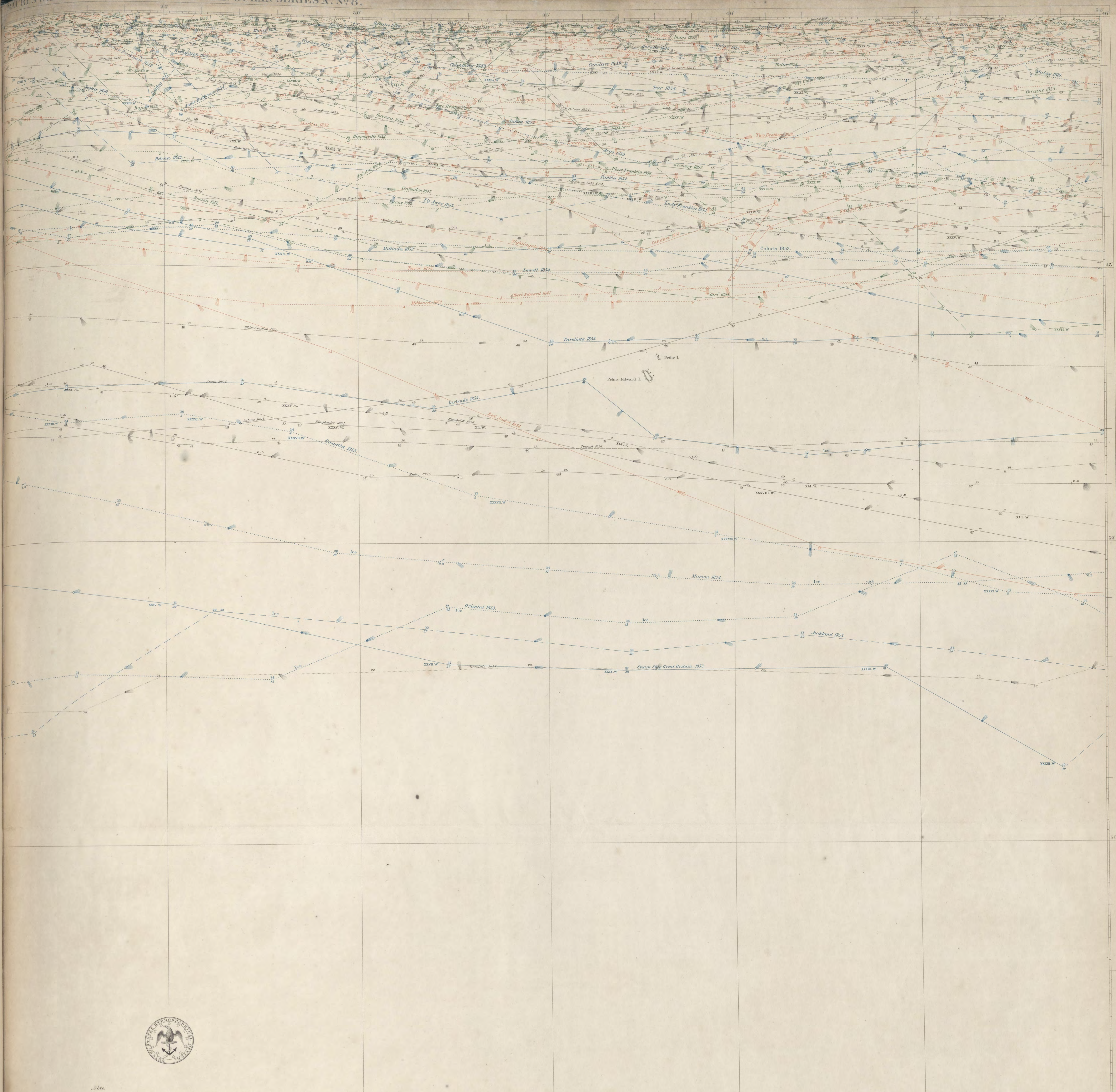
MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. № 5.

Drawn by R.H. Wyman & G.B. Balsh, Lieutenants, U.S. Navy, April 1854.

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. No 6

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. No. 7.
BORNEO
CELEBES
NEW GUINEA
BANDA SEA
ARAFURA SEA
JAVA
TIMOR
Flores
Sumbawa
Melville I.
Van Diemen Gulf
ARNHEM LAND
GULF OF CARPENTARIA
CARPENTARIA
TASMAN LAND
DAMPIER'S LAND
DE WITT LAND
ENDRAGT LAND
EDEL LAND
VLAMING LAND
LEEUWIN LAND
NUYT'S LAND
FLINDER'S LAND
WESTERN AUSTRALIA
SOUTHERN AUSTRALIA
AUSTRALIA
SPENCER'S GULF
Kangaroo I.
UNITED STATES HYDROGRAPHICAL OFFICE
Note.
The winds are denoted by small brushes the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of the sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze — ditto with squalls
a moderate breeze — do.
a light breeze — do.
a very light breeze — do.
light airs — do.
light variable airs — do.
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 30, show the temperature of the water.
The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line represents the first month of each season; if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season; as January, April, July or October; and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.
1856.
110 Longitude East from Greenwich
Tracks projected by Lt. G. P. Welsh. U.S.N.

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. No. 8.



Note.

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind			
a fresh breeze		*ditto with squalls*	
a moderate breeze		*do.*	
a light breeze		*do.*	
a very light breeze		*do.*	
light airs		*do.*	
light variable airs		*do.*	
calm			

Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.

A moderate breeze varying during the day from North by the westward to S.W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them, thus 60 shew the temperature of the water.

The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season; if Black, December; if Green, March; if Red, June or if Blue, September. A broken line — — — represents the second month of each season; as January, April, July or October, and a dotted line .... the third or last month; as February, May, August or November, according to the colour of the season.

The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.

1856.

Tracks projected by Lieut. J. W. Johnson, U.S. Navy.

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. Nº 9.

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. No 10.

MAURY'S WIND AND CURRENT CHART INDIAN OCEAN SERIES A. No. 11.

MAURY'S WIND AND CURRENT CHART. SOUTH PACIFIC No. 3 SERIES A.

Note.

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind			
a fresh breeze		*ditto with squalls*	
a moderate breeze		*do.*	
a light breeze		*do.*	
a very light breeze		*do.*	
light airs		*do.*	
light variable airs		*do.*	
calm			

Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.

A moderate breeze varying during the day from North by the westward to S.W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them, thus 80 shew the temperature of the water.

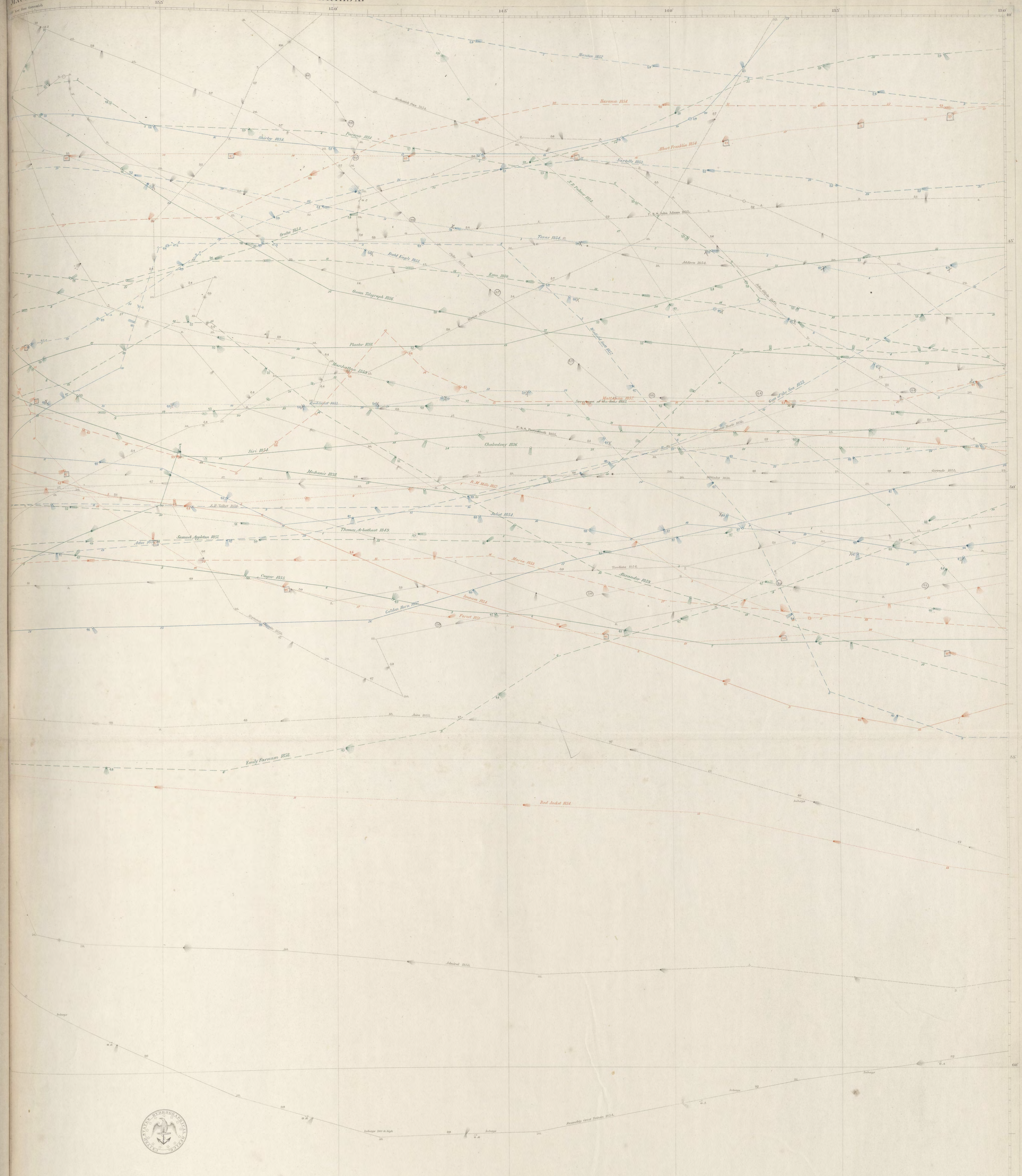
The colours represent the seasons: Black, the months of December, January and February; Green the months of March, April and May; Red, the months of June, July and August and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season: if Black, December; if Green, March; if Red, June or if Blue, September. A broken line — — — represents the second month of each season: as January, April, July or October; and a dotted line .... the third or last month: as February, May, August or November, according to the colour of the season.

The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.

Drawn by Lardner Gibbon P.M. U.S.N.

1852.

MAURY'S WIND AND CURRENT CHART. SOUTH PACIFIC No. 8. SERIES A.



Note.

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind ——— ditto with squalls ———
a fresh breeze ——— do. ———
a moderate breeze ——— do. ———
a light breeze ——— do. ———
a very light breeze ——— do. ———
light airs ——— do. ———
light variable airs ——— do. ———
calm ——— ○

Part of the day a moderate breeze from S. W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S. E. and part of the day a light breeze from N.

A moderate breeze varying during the day from North by the westward to S. W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them: thus 60, shew the temperature of the water.

The colours represent the seasons: Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season: if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line – – – represents the second month of each season: as January, April, July or October; and a dotted line ...... the third or last month: as February, May, August or November, according to the colour of the season.

The names of men-of-war or Government vessels are in minuscular letters, the names of merchant vessels in Italics.

MAURY'S WIND AND CURRENT CHART. SOUTH PACIFIC No. 9. SERIES A.

Note.

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows. the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind
a fresh breeze — *ditto with squalls*
a moderate breeze — *do.*
a light breeze — *do.*
a very light breeze — *do.*
light airs — *do.*
light variable airs — *do.*
calm

Part of the day a moderate breeze from S. W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S. E. and part of the day a light breeze from N.

A moderate breeze varying during the day from North by the westward to S. W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them, thus 60 shew the temperature of the water.

The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season; if Black, December; if Green, March; if Red, June, or if Blue, September. A broken line – – – – represents the second month of each season; as January, April, July or October; and a dotted line .... the third or last month, as February, May, August or November according to the colour of the season.

The names of men-of-war or Government vessels, are in Roman letters; the names of merchant vessels in Italics.

MAURY'S WIND AND CURRENT CHART. SERIES A. SOUTH PACIFIC Nº 10.

Note.

The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.

a gale of wind			
a fresh breeze		*Ditto with squalls*	
a moderate breeze		*do*	
a light breeze		*do*	
a very light breeze		*do*	
light airs		*do*	
light variable airs		*do*	
calm			

Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.

Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.

A moderate breeze varying during the day from North by the westward to S.W.

Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.

The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.

The figures with a line under them, thus 60 shew the temperature of the water.

The colours represent the seasons: Black the months of December, January and February; Green the months of March, April and May; Red the months of June, July and August, and Blue the months of September, October and November. The tracks by their character represent the months. An unbroken line ——— represents the first month of each season: if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line — — — represents the second month of each season: as January, April, July or October; and a dotted line .... the third or last month: as February, May, August or November, according to the colour of the season.

The names of men of war or Government vessels are in Roman letters; the names of merchant vessels in Italics.

MAURY'S
WIND & CURRENT CHART.
NORTH PACIFIC NO. 2. SERIES A.
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze ditto with squalls
a moderate breeze do.
a light breeze do.
a very light breeze do.
light airs do.
light variable airs do.
calm
Part of the day a moderate breeze from S. W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S. E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S. W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 60 show the temperature of the water.
The colours represent the seasons: Black, the months of December, January and February; Green, the months of March, April and May; Red: the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line represents the first month of each season: if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season, as January, April, July or October and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels are in Roman letters; the names of merchant vessels in Italics.
Drawn by Lardner Gibbon P.M. U.S.N.
1851.
PROVINCE OF OCHOTSK
KAMTSCHATKA
SEA OF OKOTSK
SACHLIN SEA
KURILE ISLANDS
SACHALIN
GULF OF TARTARY
BAY OF PATIENCE
JESSO OR MAITSMAI
STATEN I.
Ochotsk
Cape Nutchai
Yamskaya Bay
Cape Piagin
Mount Kronotskoi
Bherings
Mednoi or Copper
Harbor of Bolcheretskoi
Avatcha Bay or Petropaulski
Cape Lopatka
Paramouchir
Matoua
Perouse Strait
Cape Aniwa
Tracks protracted by Lieut. I. W. Johnson U.S. Navy

UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART.
NORTH PACIFIC NO. 3. SERIES A.
Drawn by Lardner Gibbon P.M. U.S.N.
1850.
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze
ditto with squalls
a moderate breeze
do
a light breeze
do
a very light breeze
do
light airs
do
light variable airs
do
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 80 shew the temperature of the water.
The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line represents the first month of each season; if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season; as January, April, July or October; and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels, are in Roman letters; the names of merchant vessels in Italics.
SEA OF ANADIR
BHERING'S STRAITS
Bay of the Holy Cross
Gulf of Anadir
Cape St. Thaddeus
St. LAWRENCE ISLAND
Cape York
Pt. Spencer
Cape Douglas
Kings I.
Cape Woolley
Sledge or Aiak I.
Cape Darby
NORTON SOUND
Stuarts Is.
Shallow Water Pt.
Pastol Bay
Cape Romanzoff
Matwi or Gores Is.
Pinnacle
Nunivak Island
Cape Vancouver
Cape Avinoff
St. Pauls I.
St. Georges I.
BRISTOL BAY
ALIASKA
OONEMAK
OONALASHKA
UNMAK
FOX ISLANDS
ANDREANOVSKIE ISLES
Atha
Amlia
Kiska
Amtchitka
Attou I.
Agatta
Semidi
Palmetto 1852
Pathfinder 1853
Lydia 1851
Samuel Merritt 1856
Lucy Elizabeth 1853
Constellation 1843
Jamestown 1853
Stingray 1853
Elgin 1853
Ann Welsh 1851
Columbus 1846
East of Greenwich 180° West of Greenwich
175
180
170
165
160
65
60
55
50
45
40

UNITED STATES HYDROGRAPHICAL OFFICE.
MAURY'S
WIND & CURRENT CHART.
NORTH PACIFIC NO. 4. SERIES A.
Note
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze — ditto with squalls.
a moderate breeze — do.
a light breeze — do.
a very light breeze — do.
light airs — do.
light variable airs — do.
calm
Part of the day a moderate breeze from S. W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S. E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S. W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 80 shew the temperature of the water.
The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August; and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ________ represents the first month of each season: if Black, December; if Green, March; if Red June or if Blue, September. A broken line _ _ _ _ _ represents the second month of each season; as January, April, July or October; and a dotted line .... the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels, are in Roman letters; the names of merchant vessels in Italics.
Drawn by Lardner Gibbon P.M. U.S.N.
A
R U S S I A N   A M E R I C A
BRISTOL BAY
ALASKA
Selechevo Lake
Lake Agoleogok
COOKS INLET
STRAIT OF CHELEKHOF
KODIAK
Prince Williams Sound
Montague I.
Middleton I.
Cape Suckling
Kayes I.
Cape Hinchinbrook
Cape Elizabeth
Barren Is.
Cape Douglas
C. Whitsunday
C. Greville
Cape Trinity
Trinity Is.
Foggy Is.
Cape Fairweather
Port des Francais
Berners Bay
Cape Spencer
CROSS SOUND
Cape Edgecumbe
Sitka Sound
Cape Ommaney
Prince Frederick Sound
Dixons Channel
Cape St. James
Cape Phipps
Boundary between Russia and England 1825.
QUEEN CHARLOTTE ISLES
Palmetto 1852
Vincennes 1841
Cleopatra 1853.
Portsmouth 1853
Wanderer 1856
Tracks projected by Lieut. A. W. Johnson, U.S. Navy.

UNITED STATES HYDROGRAPHICAL OFFICE
WIND AND CURRENT
CHART
OF THE
NORTH PACIFIC
BY
M. F. Maury A. M. Lieut. U. S. Navy.
Superint^dt. of U.S.N. Observatory
WASHINGTON
Compiled from Materials in the Bureau of Ordnance and Hydrography
Commodore Lewis Warrington
Chief of Bureau.
Drawn by P. M. Lardner Gibbon, U.S.N.
1849.
NO. 5. SERIES A.
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected
a gale of wind
a fresh breeze ... ditto with squalls
a moderate breeze ... do
a light breeze ... do
a very light breeze ... do
light airs ... do
light variable airs ... do
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 80 shew the temperature of the water.
The colours represent the seasons; Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line represents the first month of each season; if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season; as January, April, July or October; and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels, are in Roman letters; the names of merchant vessels in Italics.
OREGON
CALIFORNIA
VANCOUVER I.
Queen Charlotte Sound
Cape Caution
Calverts Is.
Milbank Sd.
Bute Inlet
Desolation Sound
Woody Point
Esperanza Inlet
Nootka Sound
Jarvis Inlet
Howe Sound
Burrard Inlet
Frazer River
Gulf of Georgia
Gaston Bay
Bellingham Bay
Padilla Bay
Straits de Fuca
Cape Classet
Port Alava
Puget Sound
Gray Harbour
Cape Disappointment
Columbia River
Cape Perpetua
Cape Blanco or Oxford
Bay of Trinidad
C. Mendocino
120
125
130
135

MAURY'S WIND AND CURRENT CHART. NORTH PACIFIC SERIES A. No 6.

MAURY'S WIND AND CURRENT CHART. NORTH PACIFIC SERIES A. Nº 7.

MAURY'S WIND AND CURRENT CHART. NORTH PACIFIC SERIES A. Nº 8. *Drawn by W. C. B. S. Porter, Lieut. U.S.N.*

MAURY'S WIND AND CURRENT CHART. NORTH PACIFIC SERIES A. Nº 9. *Drawn by T. S. Fillebrown, U.S.N.*

Clipperton Rock, as seen by H.M. Ship Inconstant; J. Shepherd Esq. Captain: on the afternoon of the 13th. July 1850.
Supposed length - from four to six miles.
UNITED STATES HYDROGRAPHICAL OFFICE.
MAURY'S
WIND & CURRENT CHART.
NORTH PACIFIC NO. 10. SERIES A.
Note.
The winds are denoted by small brushes, the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze
a moderate breeze
a light breeze
a very light breeze
light airs
light variable airs
calm
ditto with squalls
do.
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 80 shew the temperature of of the water.
The colours represent the seasons: Black the months of December, January and February; Green, the months of March, April and May; Red the months of June, July and August, and Blue the months of September, October and November. The tracks by their character, represent the months. An unbroken line represents the first month of each season; if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line represents the second month of each season; as January, April, July or October; and a dotted line the third or last month; as February, May, August or November, according to the colour of the season.
The names of men-of-war or Government vessels, are in Roman letters; the names of merchant vessels in Italics.
Drawn by Lardner Gibbon P.M. U.S.N.
1852.
UPPER CALIFORNIA
LOWER CALIFORNIA
GULF OF CALIFORNIA
MEXICO
San Francisco
Monterey
San Simeon
Pt. Concepcion
Puerto de San Diego
Bahia de Todos Santos
Cape Colnett
Guadalupe
Cerros I.
Mazatlan
Cape St. Lucas
Guaymas
La Paz
Tres Marias
Cape Corrientes
Socorro I.
Clipperton Rock
Washington Island

UNITED STATES HYDROGRAPHICAL OFFICE
MAURY'S
WIND & CURRENT CHART
NORTH PACIFIC NO. II. SERIES A.
Note.
The winds are denoted by small brushes the head of the brush pointing to the direction whence the wind blows, the character of the brush designating the character of the wind, and the divergence of its sides the extreme variation in direction of wind. Squalls are represented by dashes appended to the character with which they are connected.
a gale of wind
a fresh breeze ... ditto with squalls
a moderate breeze ... do.
a light breeze ... do.
a very light breeze ... do.
light airs ... do.
light variable airs ... do.
calm
Part of the day a moderate breeze from S.W. and part of the day moderate from E. by S.
Part of the day a fresh breeze from S.E. and part of the day a light breeze from N.
A moderate breeze varying during the day from North by the westward to S.W.
Currents are denoted by arrows, the length of the arrow being proportionate to the strength of the current, which is also expressed in knots and decimals by numerals placed by the side of the arrow.
The Roman numerals denote the degrees of Magnetic Variation as observed by the vessel near whose track they are placed.
The figures with a line under them, thus 80 show the temperature of the water.
The colours represent the seasons: Black, the months of December, January and February; Green, the months of March, April and May; Red, the months of June, July and August, and Blue, the months of September, October and November. The tracks by their character represent the months. An unbroken line ———— represents the first month of each season: if Black, December; if Green, March; if Red, June; or if Blue, September. A broken line – – – – represents the second month of each season: as January, April, July or October; and a dotted line .... the third or last month: as February, May, August or November, according to the colour of the season.
The names of men of war or Government vessels, are in Roman letters, the names of merchant vessels in Italics.
Drawn by Lardner Gibbon P.M. U.S.N.
1852
MEXICO
GUATEMALA
COSTA RICA
PANAMA
NEW GRANADA
ECUADOR
Gulf of Tehuantepec
Isthmus of Tehuantepec
Lag. of Terminos
San Salvador
Gulf of Fonseca
Realejo
Lake Nicaragua
Salinas B.
C. Blanco
Gulf of Dulce
Porto Bello
Gulf of St. Miguel
Point Garachine
Cape Corrientes
Point Chirambira
Bay of Choco
I. Gorgona
B. Mira
Bay of Sardinas
C. San Francisco
Pt. Pedernales
Malpelo I.
COCON ISLAND
GALAPAGOS
Culpepper I.
Wenmans I.
Abingdon I.
Bindloes I.
Towers I.
Albemarle I.

PILOT CHART

OF THE

SOUTH PACIFIC

BY

M. F. Maury. L.L.D. Lieut. U.S. Navy

Superintdt. of U.S.N. Observatory

WASHINGTON.

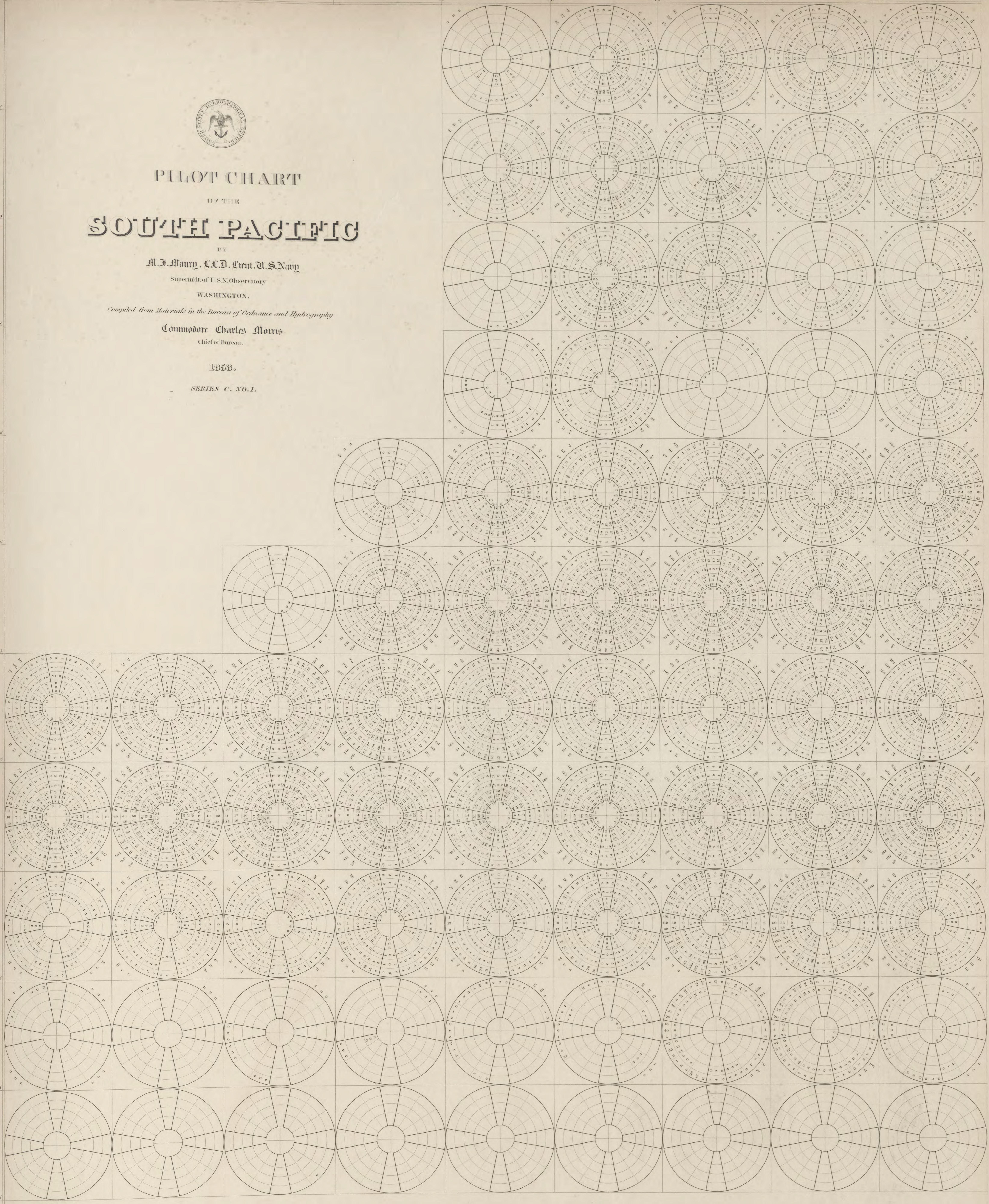
Compiled from Materials in the Bureau of Ordnance and Hydrography

Commodore Charles Morris

Chief of Bureau.

1853.

SERIES C. NO. 1.



Longitude East from Greenwich

Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 25° & 30° S. and 45° & 50° E. The figures in the N.E. corner of the circumscribed square, show that in this square, there have been examined 562 records of the winds in December, 731 in January 526 in February. In the N.E. quadrant of the inner circle we see that it was calm 9 times in addition to the 562 winds of December, and that there were 10 calms in January and 7 in February.

These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass: the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds; those between E. by N. and E. by S. are entered as from E. and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 35 22 8 between the two outer circles, mean that 35 of the 562 winds in December, 22 of the 731 in January and 8 of the 526 in February were North winds.

In Dec. the wind blew also 46 times from N.N.E: 52, N.E: 100, E.N.E: 94, E: 74, E.S.E: 43, S.E: 34, S.S.E: 11, S: 18, S.S.W: and so on.

Proceeding towards the centre, the next inner circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month: as 825 for March: 584 for April: and 555 for May: exclusive of 7 17 and 11 calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec. the second numbers for Jan. and so on.

The third space between the circles contains the winds for the three summer months in the same order June July and August between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sept. and the inner for November. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between 25° & 30° S. and 45° & 50° E. we see in the S.W. corner 353 winds, and in the S.W. quadrant 1 calm. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the Ocean: consequently, all vessels passing through this square in the month of June, were in it 118 days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass: or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds: and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8 miles good. Within 4 points and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten.

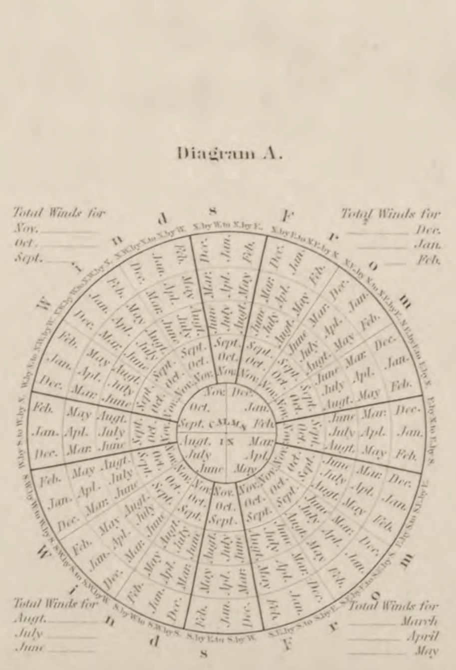
The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

National Observatory, October 1853.

M. F. Maury. Lt. U.S.N.

Diagram B.

Diagram A.



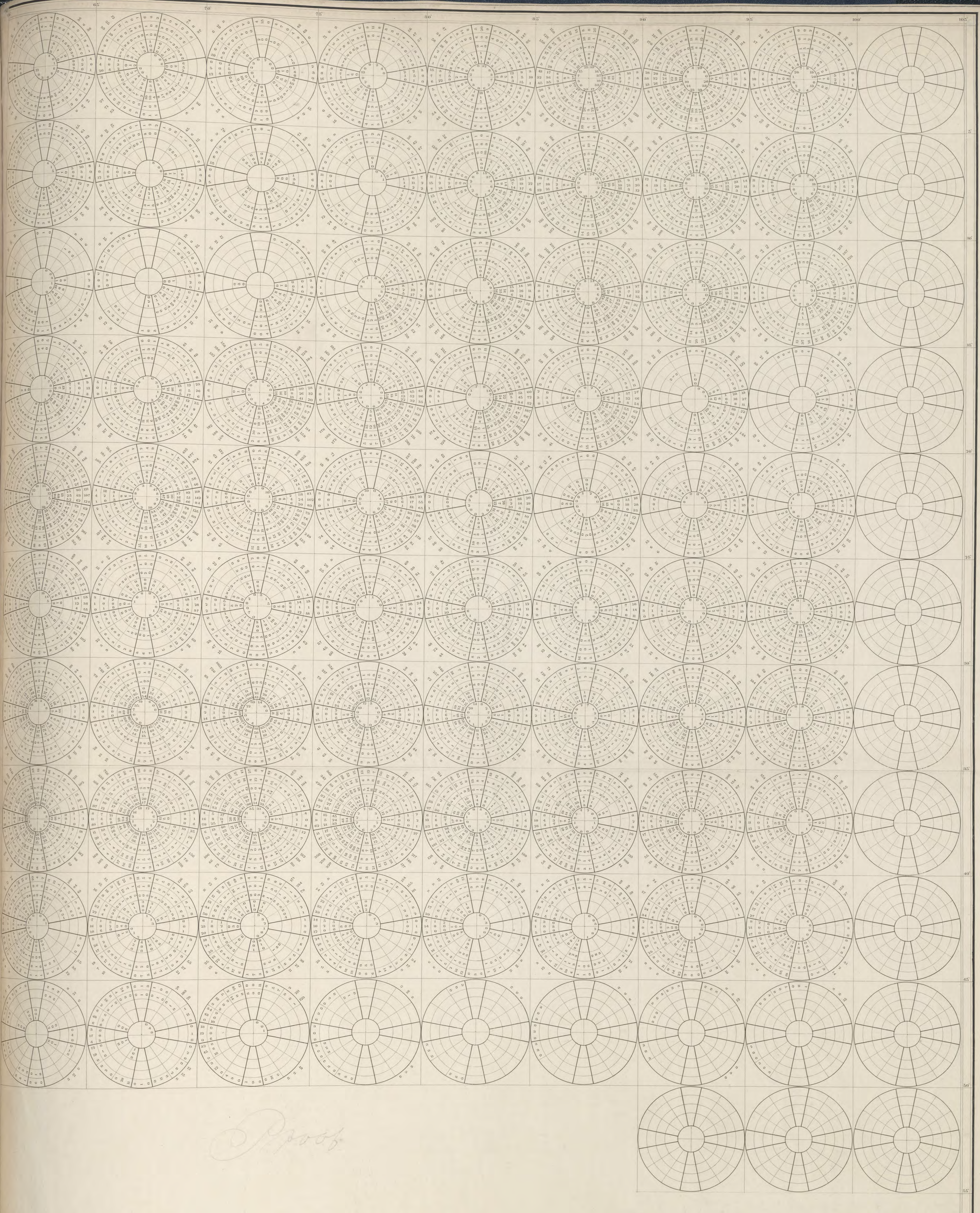


Diagram A.

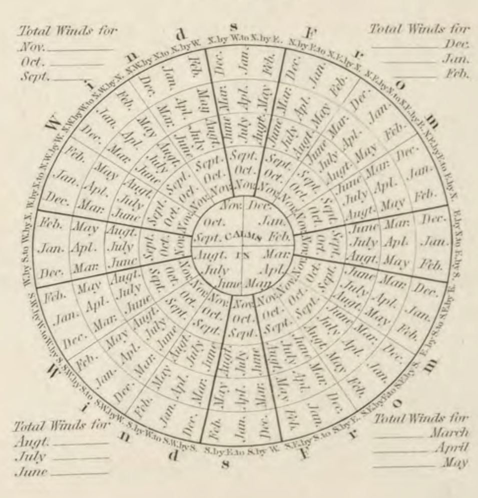


Diagram B.

PILOT CHART
OF THE
SOUTH PACIFIC

by Lieut. M. F. Maury. U. S. Navy.

National Observatory, Washington.

SHEET 2. SERIES C.

Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 35° & 40° S. and 70° & 75° E. The figures in the N.E. corner of the circumscribed square, show that in this square, there have been examined 875 records of the winds in December, 244 in January, 104 in February. In the N.E. quadrant of the inner circle we see that it was calm 31 times in addition to the 875 winds of December and that there were 3 calms also in January and 7 in February.

These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North the winds from N. by W. to N. by E. are entered as North winds Between the right hand line of these two and the next radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds; those between E. by N. and E. by S. are entered as from East, and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 27. 8. 4. between the two outer circles mean that 27 of the 875 winds in Dec., 8 of the 244 in Jan., and 4 of the 104 in Feb., were North winds.

In Dec. the wind blew also 44 times from N.N.E. 3, N.E. 23, E.N.E. 4, E. 12, E.S.E. 2, S.E. 27, S.S.E. 15, S. 75, S.S.W. and so on.

Proceeding towards the centre, the next inner circular space contains the winds according to their direction for the three Spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 212 for March; 128 for April; and 110 for May exclusive of 0 3 and 2 calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec; the second numbers for Jan., and so on.

The third space between the circles contains the winds for the three summer months in the same order, June, July and August, between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sept. and the inner for November. Diagram A. is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this; as many logs as could be obtained, have been examined, the 24 hours have been divided into three parts, of eight hours each, and according to the square in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between 35° & 40° S. and 70° & 75° E. we see in the S.W. corner 72 winds, and in the S.W. quadrant 0 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the Ocean; consequently, all vessels passing through this square in the month of June, were in it 24 days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator: Make a fac-simile and cut out the black part Now to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship, within six points of her course, makes but 3.8 good. Within 4 points and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point their true direction is therefore given on these sheets.

National Observatory, October 1853.

M. F. Maury. Lt. U. S. N.

UNITED STATES HYDROGRAPHICAL OFFICE
PILOT CHART
OF THE
SOUTH PACIFIC
by Lieut. M.F. Maury. U.S. Navy.
National Observatory. Washington.
1856.
SHEET NO. 3. 2nd Edn. Series C.
Diagram A.
Total Winds for
Nov.
Oct.
Sept.
Total Winds for
Dec.
Jan.
Feb.
Total Winds for
Augt.
July
June
Total Winds for
March
April
May
CALMS
Diagram B.
West from Greenwich
115°
110°
105°
100°
95°
90°

PILOT CHART
OF THE
SOUTH INDIAN OCEAN

BY

M. F. Maury. L.L.D. Comdr. U.S. Navy
Superin'dt of U.S.N. Observatory
WASHINGTON.

Compiled from Materials in the Bureau of Ordnance and Hydrography,
by Lieuts. J.J. Guthrie, W.C. West & J.H. Carter, U.S.N.

Captain D. N. Ingraham
Chief of Bureau.

1859.

SERIES C. NO. 3.

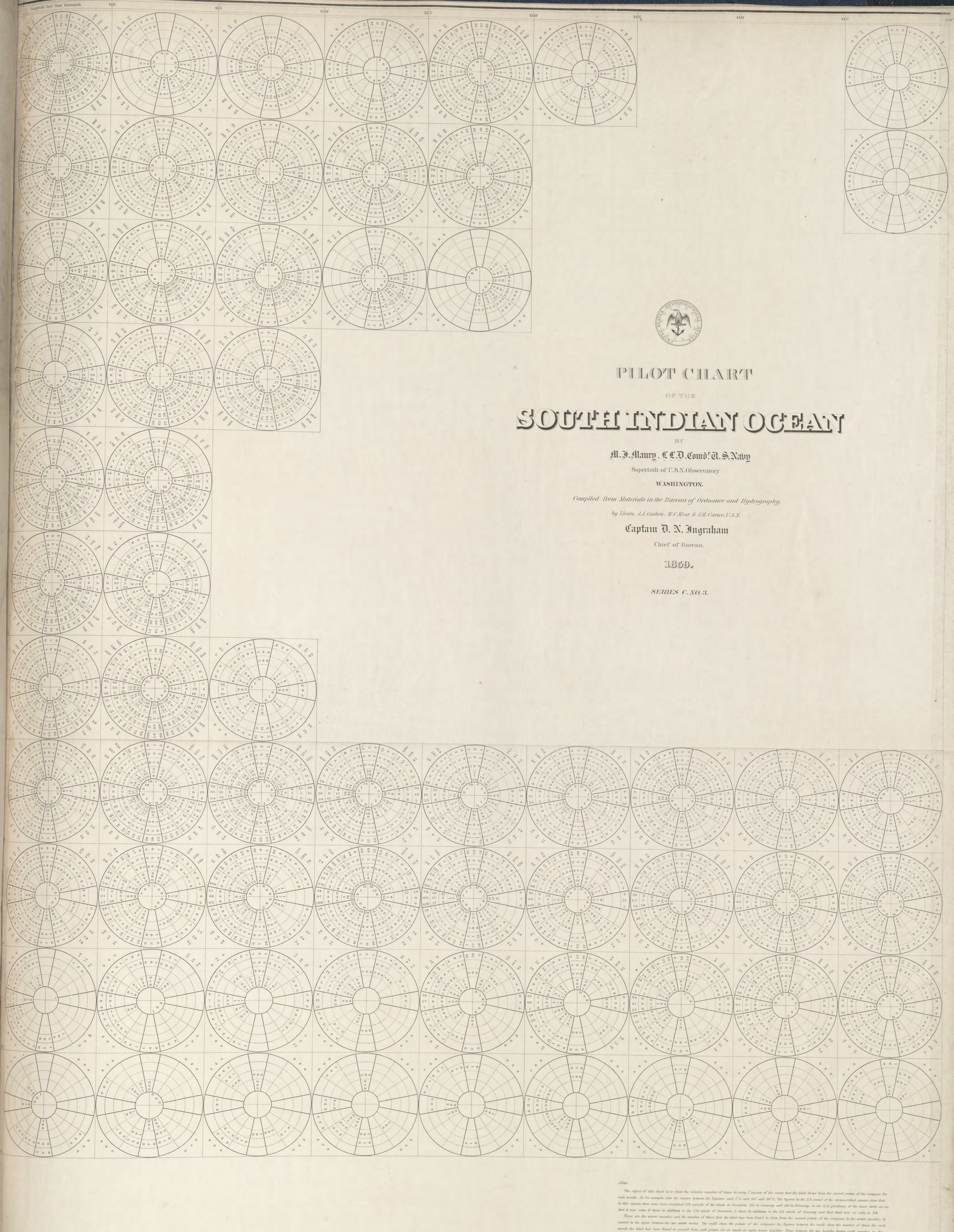
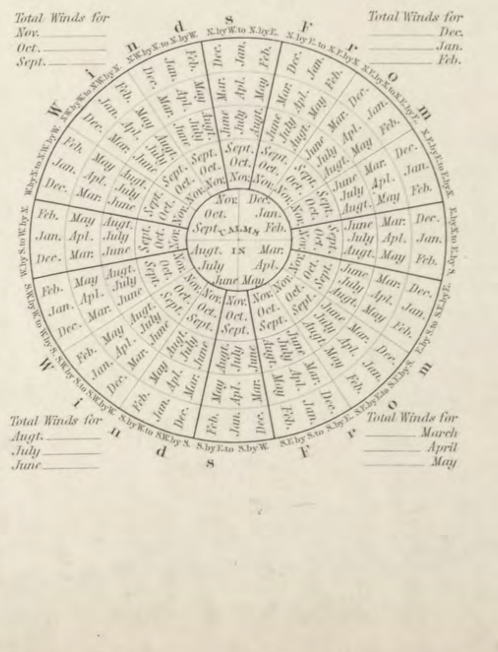


Diagram B.

Diagram A.



Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between the Equator and 5° S. and 105° and 110° E. The figures in the N.E. corner of the circumscribed square, show that in this square, there have been examined 276 records of the winds in December, 133 in January and 140 in February. In the N.E. quadrant of the inner circle we see that it was calm 16 times in addition to the 276 winds of December, 3 times in addition to the 133 winds of January and that there was no calm in Feb.

These are the winter months: and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for so much as eight hours together. Thus, between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from E., and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 26. 35. 36. between the two outer circles, mean that 26 of the 276 winds in Dec., 35 of the 133 in Jan., and 36 of the 140 in Feb., were North winds.

In Dec. the wind blew also 7 times from N.N.E: 20. N.E: 0. E.N.E: 3. E: 1. E.S.E: 8. S.E: 7. S.S.E: 22. S: 21. S.S.W. and so on.

Proceeding towards the centre, the next inter-circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 199 for March: 369 for April: and 336 for May: exclusive of 8. 50 and 31 calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec: the second numbers for Jan., and so on.

The third space between the circles contains the winds for the three summer months in the same order June, July and August, between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sept. and the inner for November. Diagram A. is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined, the 24 hours have been divided into three parts, of eight hours each, and according to the square in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between the Equator and 5° S. and 105° and 110° E. we see in the S.W. corner 246 winds, and in the S.W. quadrant 2 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean; consequently, all vessels passing through this square in the month of June, were in it 82 days.

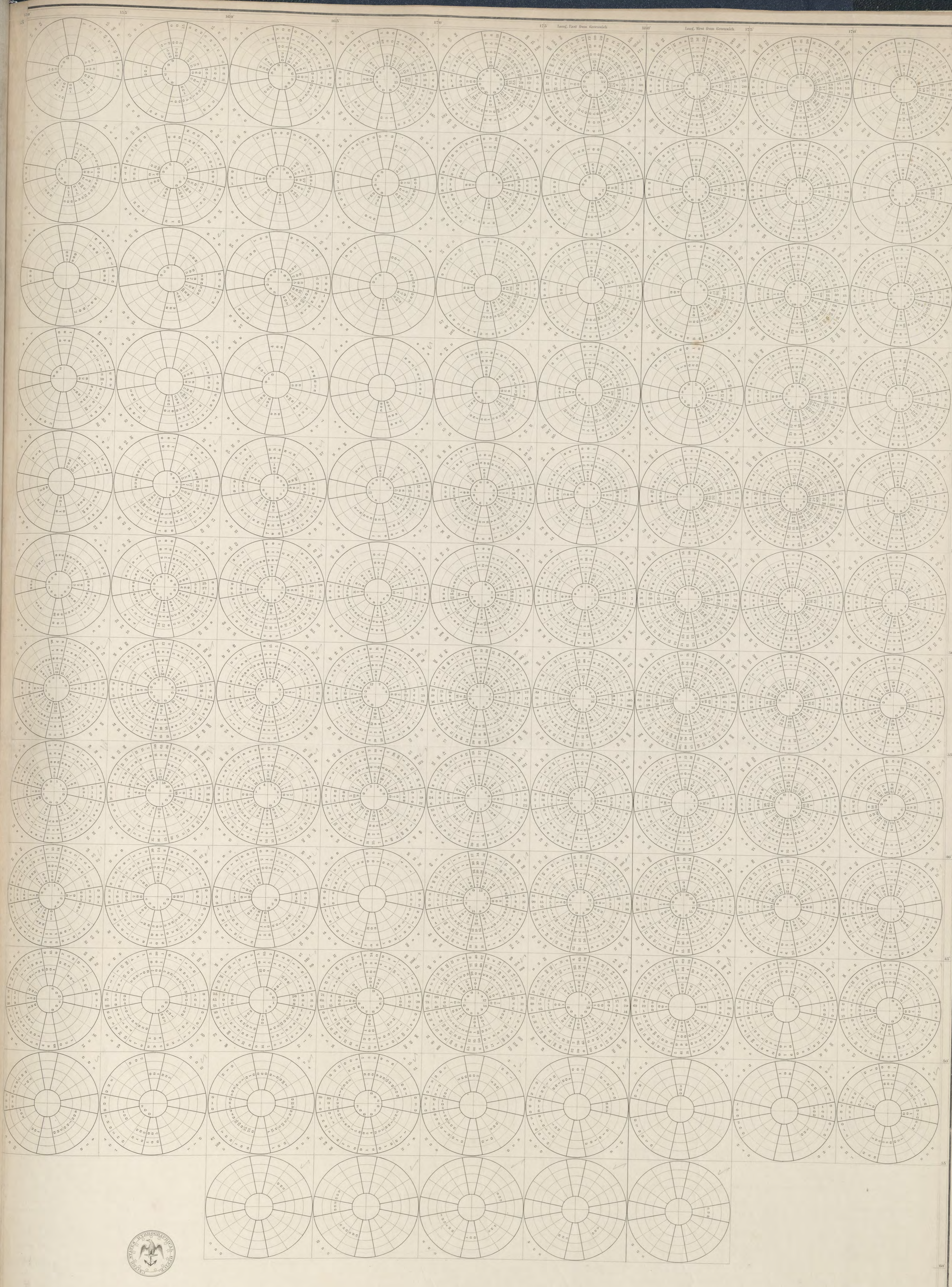
The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship, within six points of her course, makes but, 3.8 good. Within 4 points and 10 miles of distance, she makes 7.1 good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

National Observatory, September, 1859.

M. F. Maury. Comdr. U.S.N.



PILOT CHART

OF THE

SOUTH PACIFIC

BY

M. F. Maury. LL.D. Comdr. U.S. Navy.

National Observatory.

WASHINGTON.

1859.

SERIES C. SHEET NO. 1.

Diagram A.

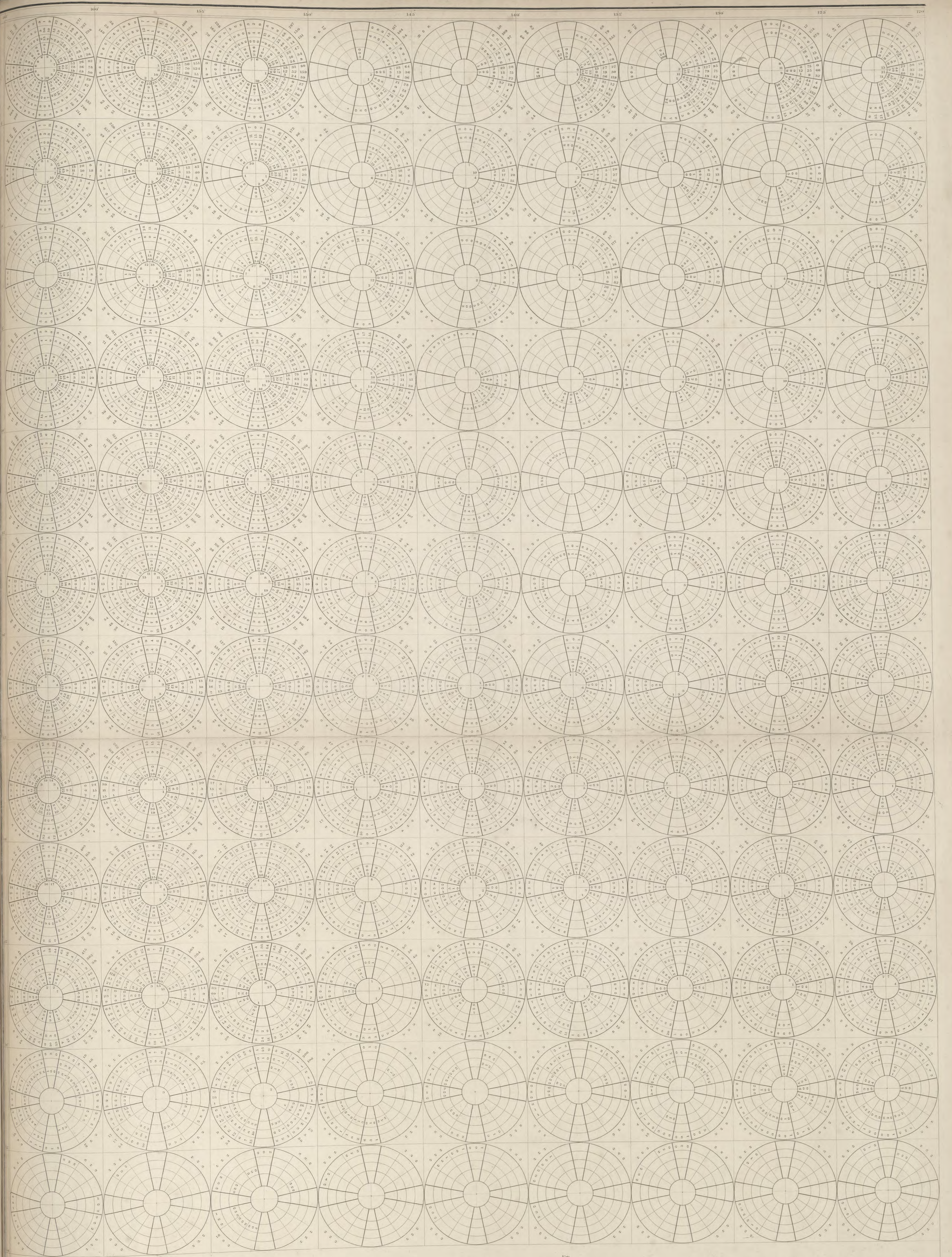


Diagram B.

Diagram A.

PILOT CHART OF THE SOUTH PACIFIC

by Lieut. M. F. Maury. U.S. Navy.

National Observatory, Washington.

SHEET NO. 5. SERIES C.

Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example take the square between the Equator and 5° S. and 160° & 165° W. The figures in the N.E. corner of the circumscribed square show that in this square there have been examined 271 records of the winds in December, 237 in January and 238 in February. In the N.E. quadrant of the inner circle we see that it was calm 9 times in addition to the 271 winds of December that there was 1 calm for January and 7 in Feb. These are the winter months and the number of times that the wind has been found to blow from the several points of compass in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass the figures between the radii show the number of times for each month the wind has been found to prevail from such points for as much as eight hours together. Thus between the two heavily drawn radii opening to the North the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the light radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from the East and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 9.1.9, between the two outer circles, mean that 9 of the 271 winds in December, 1 of the 237 in January and 9 of the 238 in Feby. were North winds. In December the winds blew also 22 times from N.N.E. 50, N.E. 33, E.N.E. 82, E. 29, E.S.E. 34, S.E. 8, S.S.E. 3, S. 0, S.S.W. and so on.

Proceeding towards the centre, the next inner circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month, as 132 for March; 209 for April and 214 for May, exclusive of 2, 3 and 20 calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds in the order of the months, beginning in the N.E. corner and quadrant as the total winds and calms for December, the second numbers for January and so on.

The third space between the circles contains the winds for the three summer months in the same order June July and August between the radii.

The space between the two inner circles is for autumn, the outer round of figures being the winds for Sept. and the inner for November. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms, for each month and point of compass.

The method in which the number and direction of the winds have been ascertained, is this, as many logs as could be obtained have been examined, the 24 hours have been divided into three parts, of eight hours each, and according to the square, in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between the Equator and 5° S. and 160° and 165° W. we see in the S.W. corner 266 winds and in the S.W. quadrant 3 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean; consequently all vessels passing through this square in the month of June, were in it 89 days and 16 hours.

The blank spaces, or the spaces that are filled up in some of the squares and circles and not in others, mean that no winds have been reported in the logs from these points of the compass, or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds, and this number subtracted from the total for the month will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the wind comes out ahead, will know what difference to make, between the chances for winds, that will enable them, to lay within 4 points of their course and the chances for winds that will enable them to lay within 2 points of their course. In sailing 10 miles, a ship, within six points of her course makes but 3.8 miles good. Within 4 points and 10 miles of distance, she makes 7.1 good and within 2 points, she makes good 9.2 miles out of ten. The winds as recorded in the logs, have been corrected for variation to the nearest point their true direction is therefore given on these sheets.

M. F. Maury. Lt. U.S.N.

National Observatory April 1856.

... from Greenwich 160° 155° 150° 145° 140° 135° 130° 125° 120°

UNITED STATES HYDROGRAPHICAL OFFICE.
PILOT CHART
OF THE
SOUTH PACIFIC
by Lieut. M.F. Maury. U.S Navy.
National Observatory, Washington.
1851.
SHEET NO. 6.
Series C.
Diagram A.
Diagram B.
Compiled by Lieut. H. N. Harrison. Prof. W. B. Benedict and Passd. Midn. A. C. Jackson U. S. N. from materials in the Bureau of Ordnance and Hydrography.
Commodore Lewis Warrington
Chief of Bureau.

This seems to be the Arabian Sea instead of the Pacific

PILOT CHART
OF THE
NORTH PACIFIC

BY

M. F. Maury. L.L.D. Lieut. U.S. Navy
Superin'dt. of U.S.N. Observatory
WASHINGTON.

Compiled from Materials in the Bureau of Ordnance and Hydrography.

Commodore Charles Morris
Chief of Bureau.

1853.

SERIES C. NO. 1.

Diagram A.

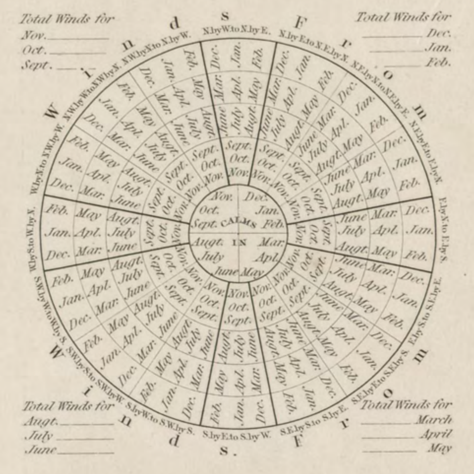
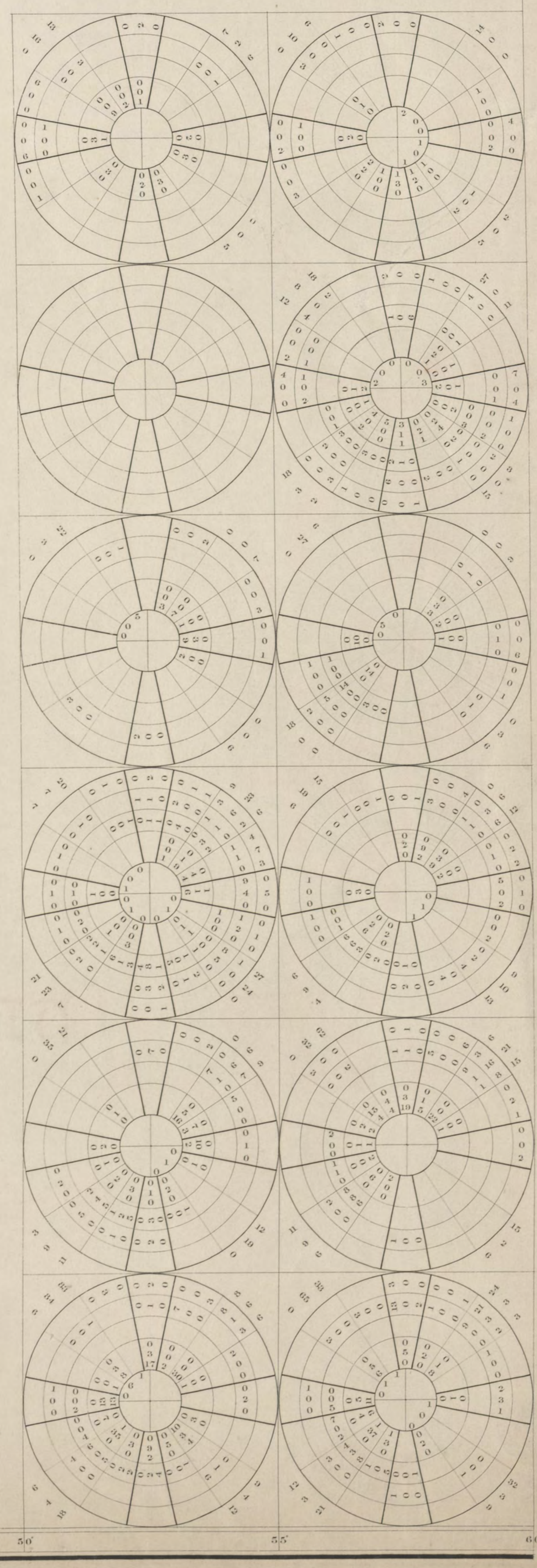


Diagram B.



Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 10° & 15° N. and 50° & 55° E. The figures in the N.E. corner of the circumscribed square, show that in this square, there have been examined 9 records of the winds in December; 23 in January 6 in February. In the N.E. quadrant of the inner circle we see that there were no calms in either December, January or February.

These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus between the two heavily drawn radii opening to the North the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds; those between E. by N. and E. by S. are entered as from East, and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 0 2 0 between the two outer circles, mean that 0 of the 9 winds in Dec, 2 of the 23 in Jan., and 0 of the 6 in Feb., were North winds.

In Dec the wind blew also 0 times from N.N.E.; 3 N.E.; 4 E.N.E.; 0 E.; 0 E.S.E.; 1 S.E.; 0 S.S.E.; 1 S.; 0 S.S.W.; and so on.

Proceeding towards the centre, the next inner circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 27 for March; 24 for April; and 0 for May; exclusive of the 1 calm for April and 1 for May in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec; the second numbers for Jan. and so on.

The third space between the circles contains the winds for the three summer months in the same order June, July and August between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sep and the inner for November. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this; as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between 10° & 15° N. and 50° & 55° E. we see in the S.W. corner 23 winds for July and in the S.W. quadrant 1 calm. These are the total number of intervals of eight hours each, for which the winds and calms for July have been examined in this 5° square of the ocean; consequently, all vessels passing through this square in the month of July were in it 8 days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship, within six points of her course, makes but 3.8 miles good. Within 4 points and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

M. F. Maury Lt. U.S.N.

National Observatory February 1853.

20° 25° 30° 35° 40° 45° 50° 55° 60°

E. Longitude East from Greenwich

Arabian Sea & Bay of Bengal

PILOT CHART
OF THE
NORTH PACIFIC

by Lieut. M. F. Maury, U.S. Navy.

National Observatory Washington.

1853.

SHEET NO. 2. SERIES C.

Diagram A.

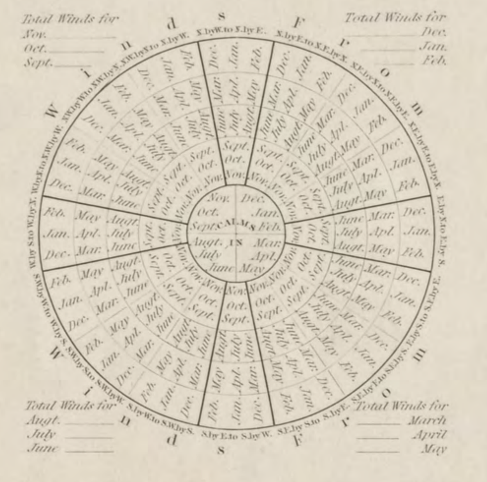


Diagram B.

Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between the Equator & 5° N. and 90° & 95° E. The figures in the N.E. corner of the circumscribed square, show that in this square there have been examined 107 records of the winds in December, 135 in January and 100 in February. In the N.E. quadrant of the inner circle we see that it was calm 11 times in addition to the 107 winds of December, 13 times in Jan. and 10 times in Feb. These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two, and the broken radius to the right of that again the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this broken radius and the next one on the right are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from East and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 20 16 16 between the two outer circles mean that 20 of the 107 winds in December, 16 of the 135 in Jan. and 16 of the 100 in Feb., were North winds. In December the wind blew also 4 times from N.N.E.; 15 N.E.; 2 E.N.E.; 8 E.; 4 E.S.E.; 11 S.E.; 3 S.S.E.; 6 S.; 1 S.S.W. and so on.

Proceeding towards the centre, the next inner circular space contains the winds, according to their direction, for the three Spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month: as 64 for March; 110 for April; and 87 for May; exclusive of 5 1 and 0 calms in the S.E. quadrant for the same months, and so on, around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec; the second numbers for Jan., and so on.

The third space between the circles contains the winds for the three summer months in the same order June, July and August between the radii.

The space between the two inner circles is for Autumn; the outer round of figures being the winds for Sep. and the inner for Nov. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours, has been entered as one wind.

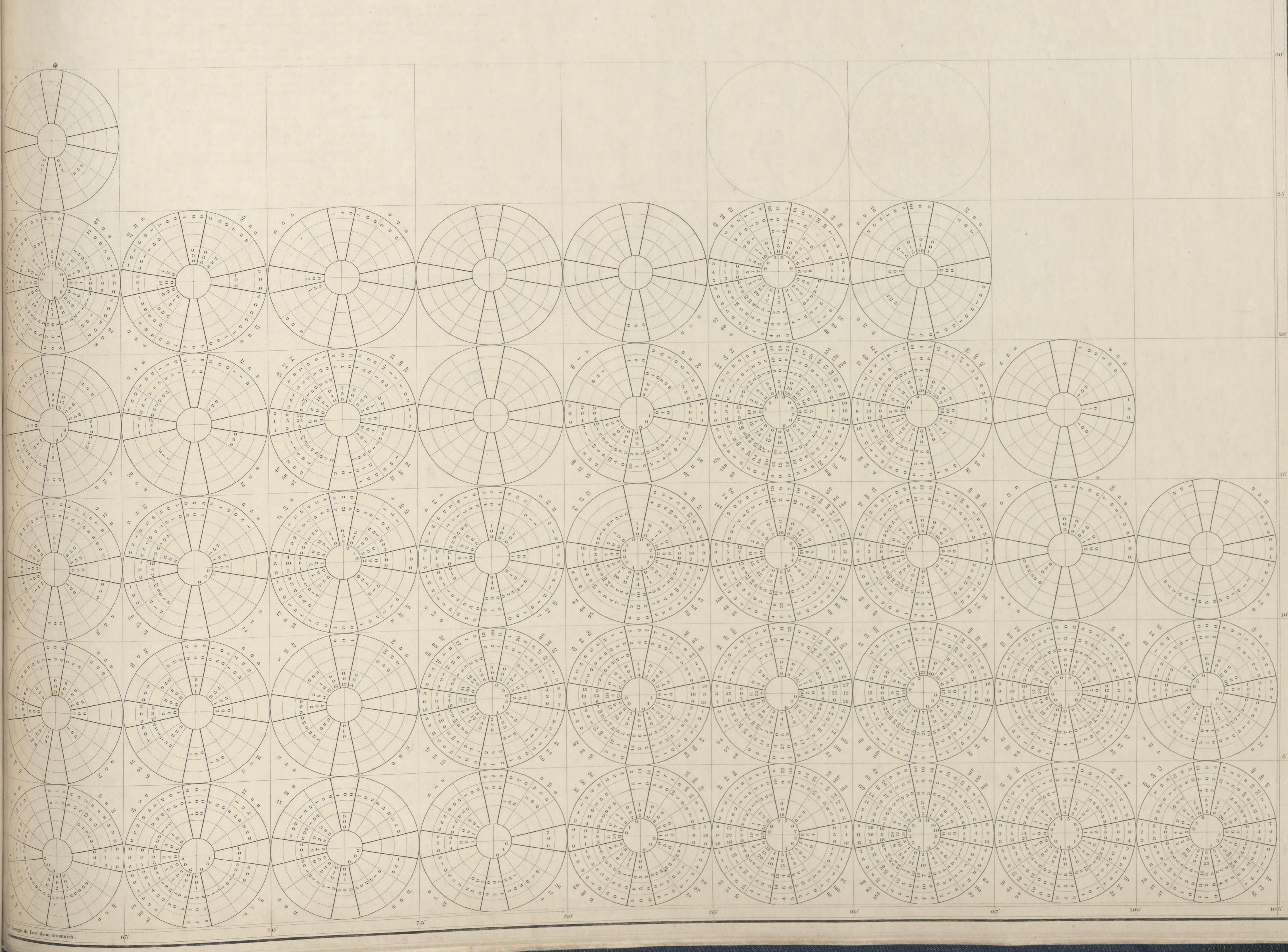
Thus in the square between the Equator & 5° N. and 90° & 95° E. we see in the S.W. corner 155 winds, and in the S.W. quadrant 5 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean; consequently, all vessels passing through this square in the month of June, were in it 53 days and 8 hours.

The blank spaces, or the spaces that are filled up in some of the squares and circles and not in others, mean that no winds have been reported in the logs from these points of the compass; or, that no calms prevailing for eight hours together, have been reported during those months.

Diagram B is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represents the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within 2 points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8 miles good. Within 4 points, and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten. The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

National Observatory, January 1853.

M. F. Maury Lt. U.S.N.



PILOT CHART
OF THE
NORTH PACIFIC

by Lieut. M. F. Maury. U.S. Navy.

National Observatory, Washington.

1853.

SHEET NO. 3 SERIES C.

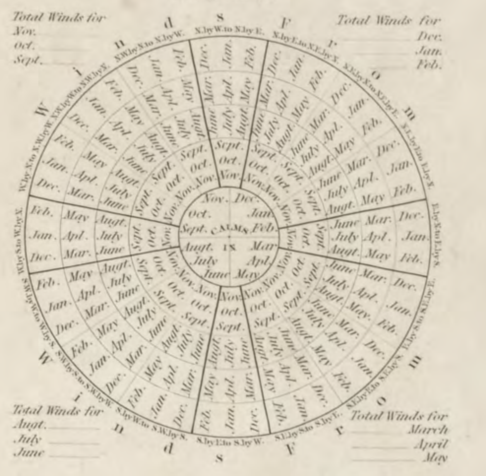


Diagram A.

Diagram B.

Note.

The object of this chart, is, to show the relative number of times in every 5° square of the ocean, that the wind blows from the several points of the compass for each month. As for example, take the square between the Equator & 5° N. and 105° & 110° E. The figures in the N.E. corner of the circumscribed square, show that in this square there have been examined 235 records of the winds in December; 178 in January, and 175 in February. In the N.E. quadrant of the inner circle, we see, that it was calm 1 time in addition to the 235 winds of December; and that there was no calm for Jan. and but 1 in Feb. These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass: the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two, and the light radius to the right of that again the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from East, and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 24 43 36 between the two outer circles mean that 24 of the 235 winds in December, 43 of the 178 in Jan and 36 of the 175 in Feb., were North winds. In December the wind blew also 54 times from N.N.E; 52 N.E; 14 E.N.E; 12 E; 1 E.S.E; 5 S.E; 1 S.S.E; 4 S; 0 S.S.W; and so on.

Proceeding towards the centre, the next inner circular space contains the winds, according to their direction, for the three Spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month, as 131 for March; 310 for April and 269 for May; exclusive of 5, 20, and 13 calms in the S.E. quadrant for the same months, and so on, around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec: the second numbers for Jan., and so on.

The third space between the circles contains the winds for the three summer months in the same order, June, July and August between the radii.

The space between the two inner circles is for Autumn; the outer round of figures being the winds for Sep. and the inner for Nov. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours, has been entered as one wind.

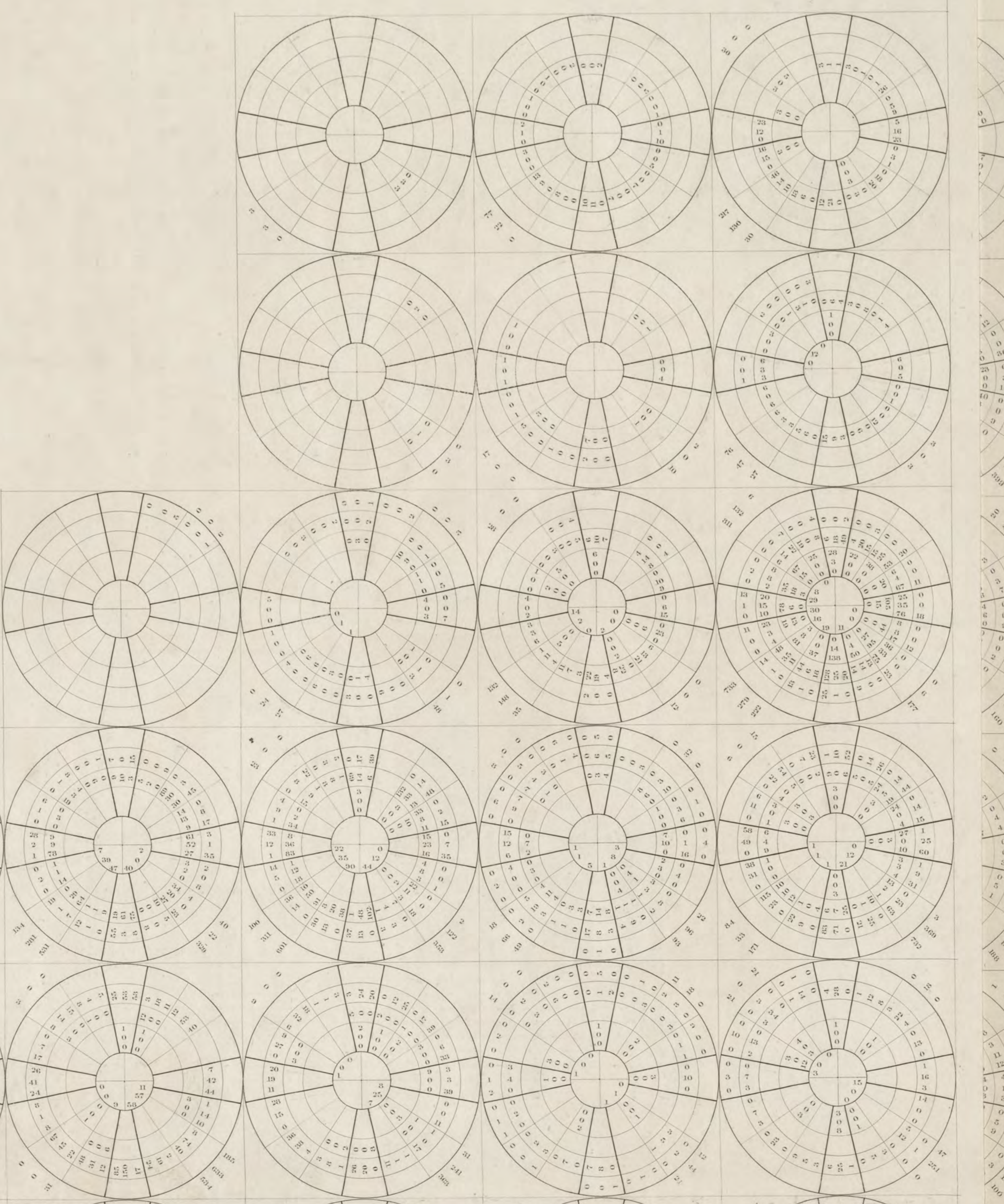
Thus in the square between the Equator and 5° N. & 105° and 110° E. we see in the S.W. corner 204 winds, and in the S.W. quadrant no calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean: consequently, all vessels passing through this square in the month of June, were in it 68 days.

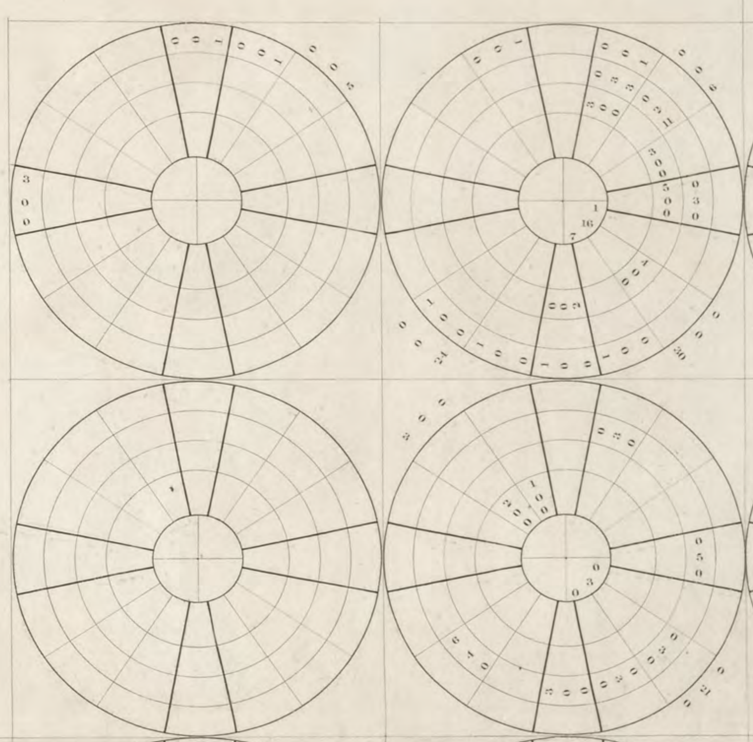
The blank spaces, or the spaces that are filled up in some of the squares and circles and not in others, mean that no winds have been reported in the logs from these points of the compass: or, that no calms prevailing for eight hours together, have been reported during those months.

Diagram B is for the convenience of the navigator: Make a fac-simile and cut out the black part. Now to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represents the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within 2 points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8 miles good. Within 4 points, and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten. The winds as recorded in the logs, have been corrected for variation to the nearest point: their true direction is therefore given on these sheets.

National Observatory, June 1853.

M. F. Maury. Lt. U. S. N.





Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 20 & 25° N. and 170° & 175° W. The figures in the N.E. corner of the circumscribed square, show that in this square there have been examined 17 records of the winds in December, 15 in January, 110 in February. In the N.E. quadrant of the inner circle we see that there were no calms in December, none in Jan., and but 2 in February. These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two, and the radius to the right of that again the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from East and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 3 1 0 between the two outer circles mean that 3 of the 17 winds in December, 1 of the 15 in January and 0 of the 110 in Feb., were North winds. In December there were no winds from N.N.E.; 2 N.E.; 0 E.N.E.; 6 E.; 6 E.S.E.; 0 S.E.; 0 S.S.E.; 0 S.; 0 S.S.W.; and so on.

Proceeding towards the centre, the next inner circular space contains the winds, according to their direction, for the three Spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month: as 111 for March; 168 for April; and 57 for May; and there were no calms in the S.E. quadrant for the same months, and so on, around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec.; the second numbers for Jan., and so on.

The third space between the circles contains the winds for the three summer months in the same order: June, July and August between the radii.

The space between the two inner circles is for Autumn; the outer round of figures being the winds for Sep. and the inner for Nov. Diagram A. is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours, has been entered as one wind.

Thus in the square between 20° & 25° N. and 170° & 175° W. we see in the S.W. corner 15 winds, and in the S.W. quadrant 2 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean; consequently, all vessels passing through this square in the month of June, were in it 5 days and 16 hours.

The blank spaces, or the spaces that are filled up in some of the squares and circles and not in others, mean that no winds have been reported in the logs from these points of the compass; or, that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represents the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within 2 points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8 miles good. Within 4 points, and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten. The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

National Observatory,
June, 1859.

M. F. Maury. Lt. U.S.N.

Diagram A.

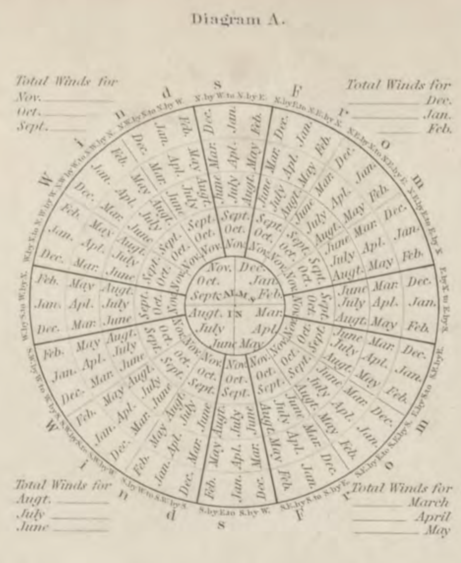


Diagram B.

UNITED STATES HYDROGRAPHICAL OFFICE

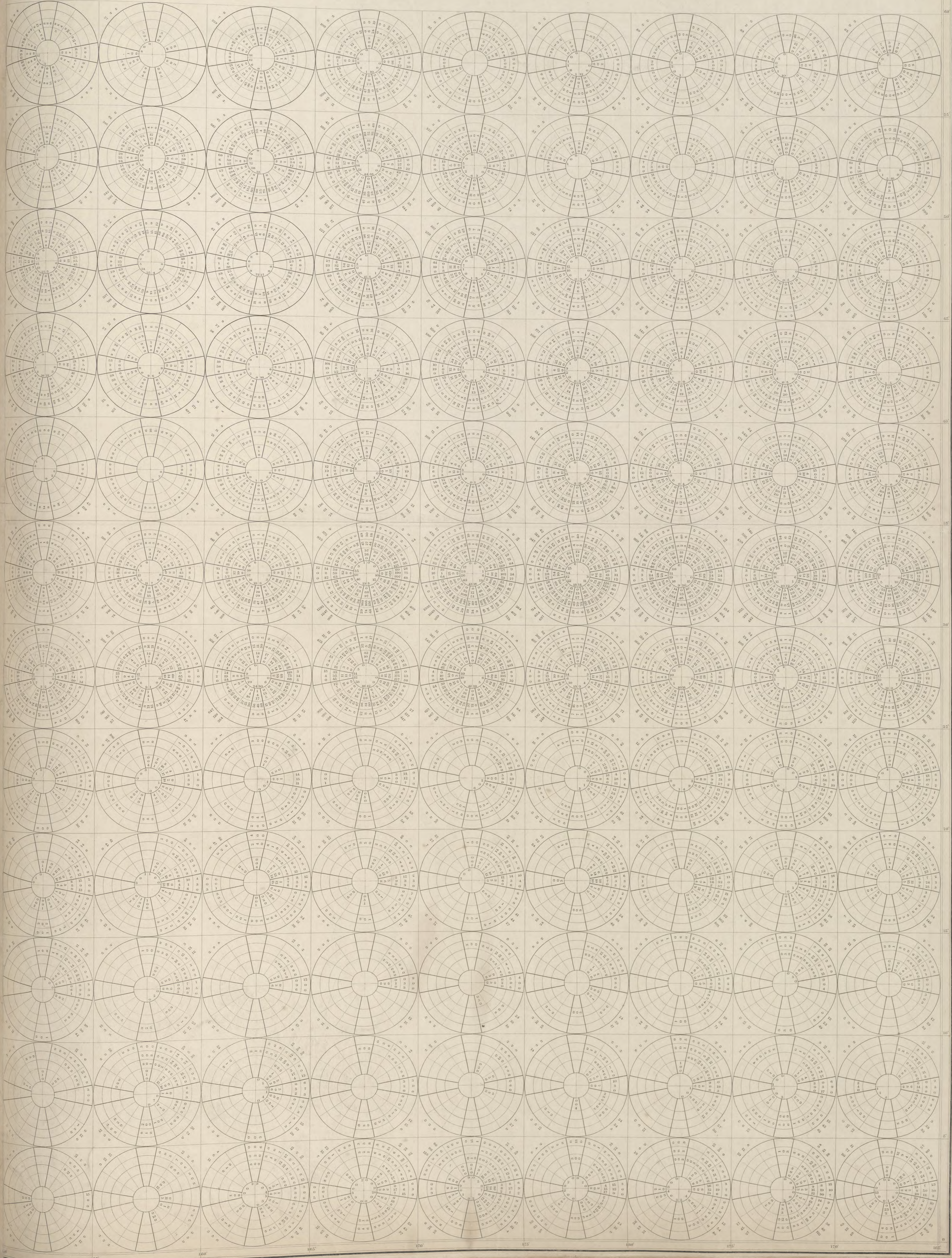
PILOT CHART
OF THE
NORTH PACIFIC

by Lieut. M. F. Maury, U.S. Navy.

National Observatory, Washington.

1852.

SHEET NO. 4. SERIES C.



Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 30° & 35° N. and 125° & 130° W. The figures in the N.E. corner of the circumscribed square, show that in this square there have been examined 155 records of the winds in December; 45 in January, 54 in February. In the N.E. quadrant of the inner circle we see that it was calm 4 times in addition *to the 155 winds of December; and that there was no calm either for Jan. or Feb. These are the winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two* outer *circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two, and the broken radius to the right of that again the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this broken radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds, those between E. by N. and E. by S. are entered as from East and so on.*

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 23, 2, 3, between the two outer *circles mean that 23 of the 155 winds in December, 2 of the 45 in Jan. and 3 of the 54 in Feb. were North winds. In December the wind blew also 21 times from N.N.E.; 7, N.E.; 11 E.N.E.; 1 E.; 13 E.S.E.; 0 S.E.; 9 S.S.E.; 3 S.; 12 S.S.W.; and so on.*

Proceeding towards the centre, the next inner circular space contains the winds, according to their direction, for the three Spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 40 for March; 123 for April; and 121 for May; exclusive *of 0., 7., and 2. calms in the S.E. quadrant for the same months, and so on, around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec.; the second numbers for Jan., and so on.*

The third space between the circles contains the winds for the three summer months in the same order, June, July and August between the radii.

The space between the two inner circles is for Autumn; the outer round of figures being the winds for Sep. and the inner for Nov. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this; as many logs as could be obtained, have been examined; the 24 hours have been divided into three parts, of eight hours each, and according to the square in which the vessel was, the prevailing direction *of the wind for every eight hours has been entered as one wind.*

Thus in the square between 30° & 35° N. and 125° & 130° W. we see in the S.W. corner 72 winds, and in the S.W. quadrant no calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the ocean; consequently, all vessels passing through this square in the month of June, were in it 24 days.

The blank spaces, or the spaces that are filled up in some of the squares and circles and not in others, mean that no winds have been reported in the logs from these points of the compass; or, that no calms prevailing for eight hours together, have been reported during those months.

Diagram B *is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represents the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within 2 points of their course. In sailing 10 miles, a ship within six points of her course, makes but 3.8. good. Within 4 points, and 10 miles of distance, she makes 7.1. good, and within 2 points, she makes good 9.2. miles out of ten. The winds, as recorded in the logs, have been corrected for variation to the nearest point; their* true *direction is therefore given on these sheets.*

M. F. Maury. Lt. U. S. N.

National Observatory, October, 1852.

Diagram A.

PILOT CHART
OF THE
NORTH PACIFIC

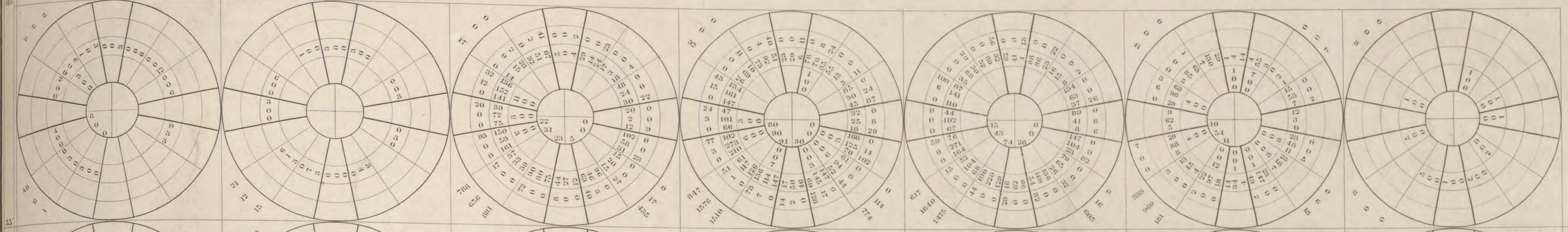
by Lieut. M.F. Maury. U.S. Navy.

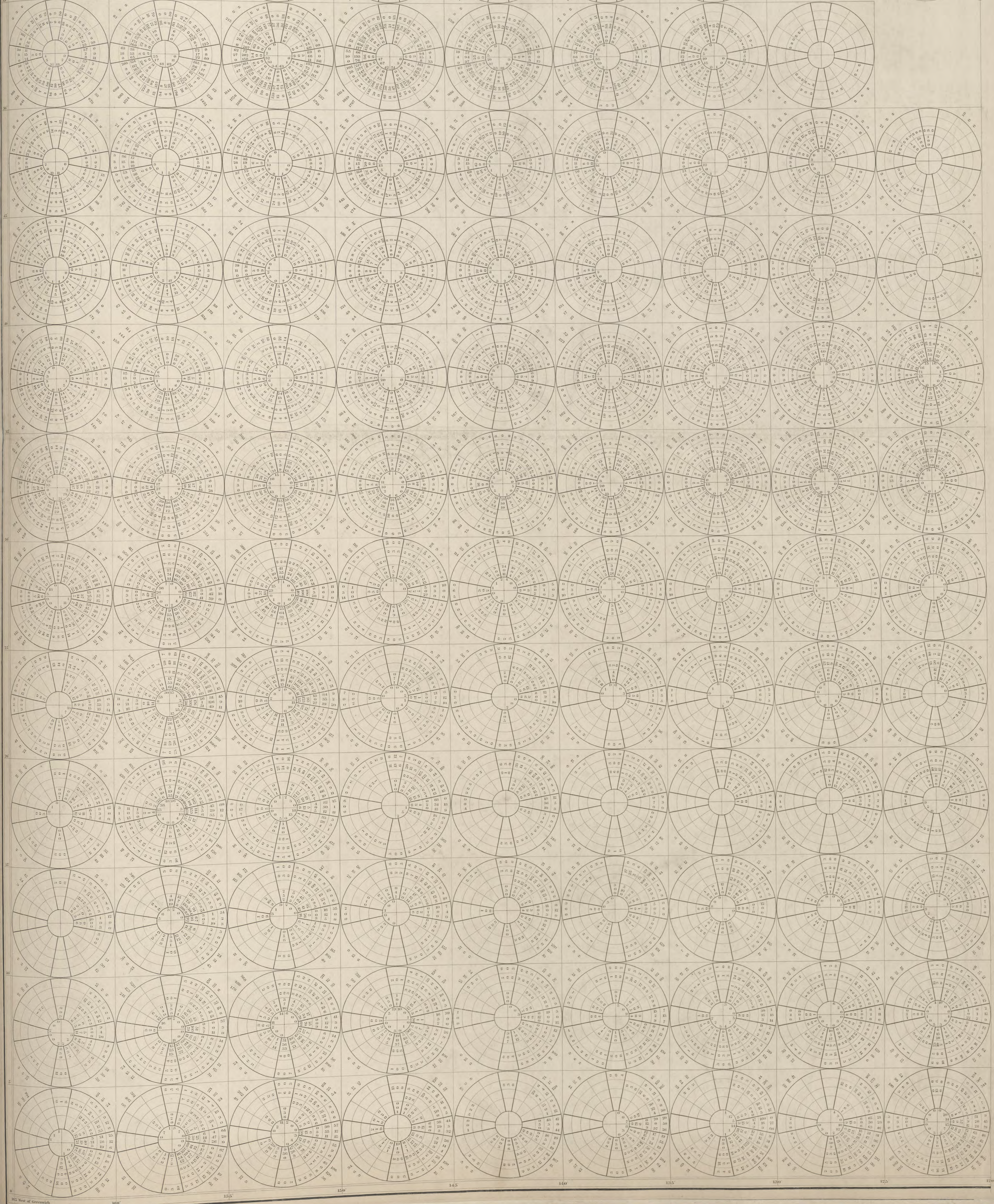
National Observatory. Washington.

1852.

SHEET NO. 5. SERIES C.

Diagram B.





PILOT CHART

OF THE

NORTH PACIFIC

BY

M. F. Maury. LL.D. Lieut. U.S. Navy

Superin'dt. of U.S.N. Observatory

WASHINGTON.

Compiled from Materials in the Bureau of Ordnance and Hydrography.

Commodore Charles Morris

Chief of Bureau.

1852.

SERIES C. NO. 6.

Note.

The object of this chart is to show the relative number of times in every 5° square of the ocean that the wind blows from the several points of the compass for each month. As for example, take the square between 0. and 5.N. and 90. and 95.W. The figures in the N.E. corner of the circumscribed square show that in this square, there have been examined 442. records of the winds in December, 737. in January, 597. in February. In the N.E. quadrant of the inner circle we see that it was calm 38 times in addition to the 597. winds of February and that there were calms also for Dec. and Jan. viz. 11 for one and 10 for the other.

These are the winter months: and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass: the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the broken radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this broken radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds; those between E. by N. and E. by S. are entered as from E., and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 0. 14. 7. between the two outer circles, mean that 0 of the 442. winds in Dec. 14. of the 737. in Jan., and 7. of the 597. in Feb., were North winds.

In Dec. the wind blew also 0 times from N.N.E: 0. N.E: 0. E.N.E: 2. E: 2. E.S.E: 77. S.E: 146 S.S.E: 164 S: 34 S.S.W: and so on.

Proceeding towards the centre, the next inner circular space contains the winds according to their direction for the three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month: as 574. for March; 588. for April; and 876. for May; exclusive of 20. 45. and 73. calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec. the second numbers for Jan. and so on.

The third space between the circles contains the winds for the three summer months in the same order June July and August between the radii.

The space between the two inner circles is for autumn: the outer round of figures being the winds for Sept. and the inner for November. Diagram A. is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained, have been examined; the 24. hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours has been entered as one wind.

Thus in the square between 0. and 5.N. & 90. and 95.W. we see in the S.W. corner 622 winds, and in the S.W. quadrant 26 calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this 5° square of the Ocean; consequently, all vessels passing through this square in the month of June, were in it 216 days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B. is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship, within six points of her course makes but 3.8. good. Within 4 points and 10 miles of distance, she makes 7.1 good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

National Observatory Oct. 1852.

M. F. Maury. Lt. U.S.N.

Diagram A.

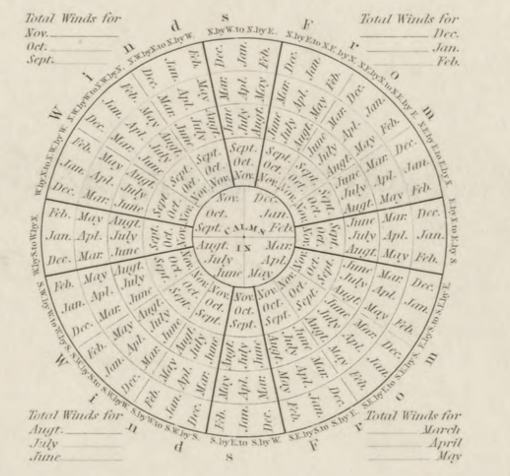
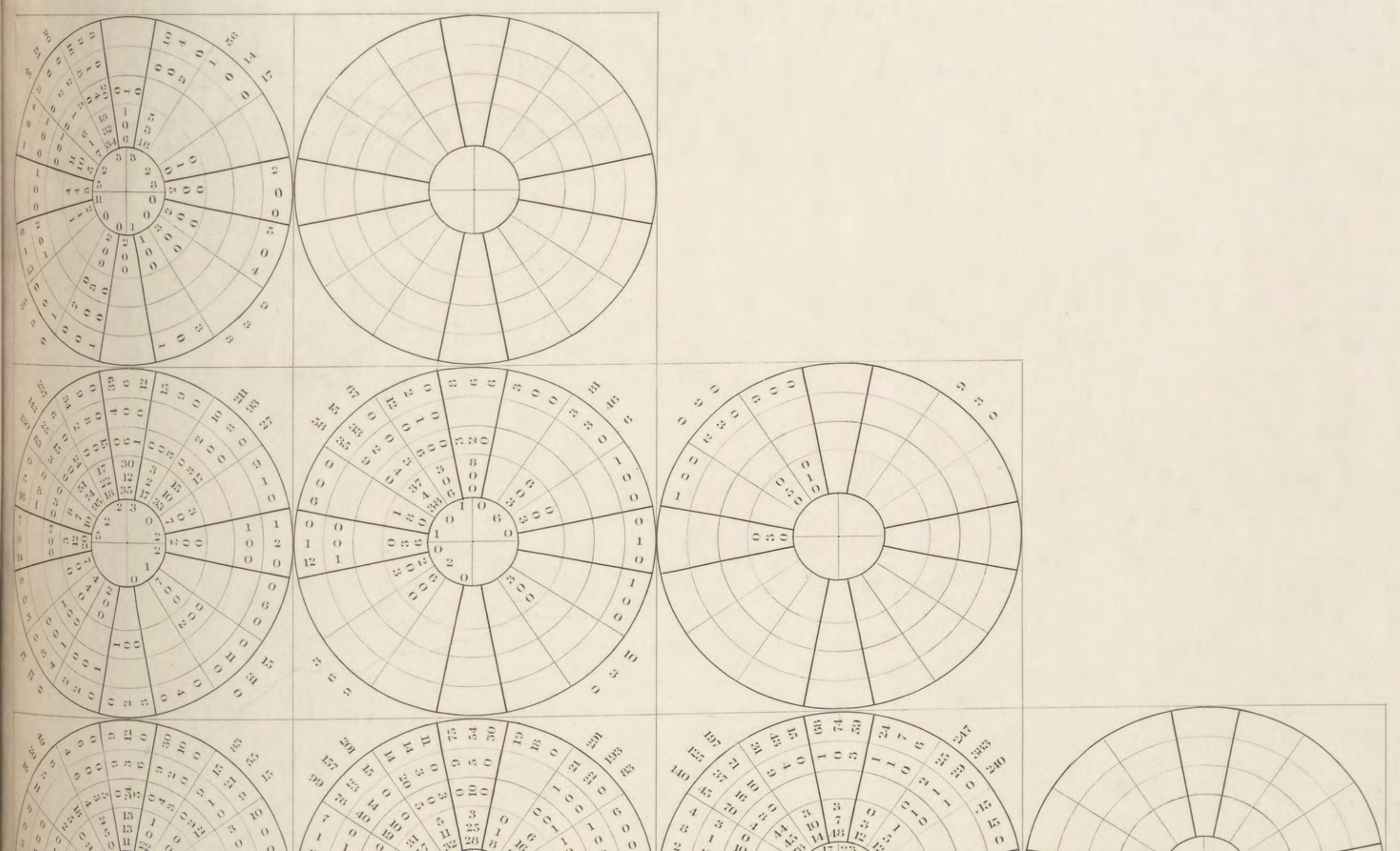
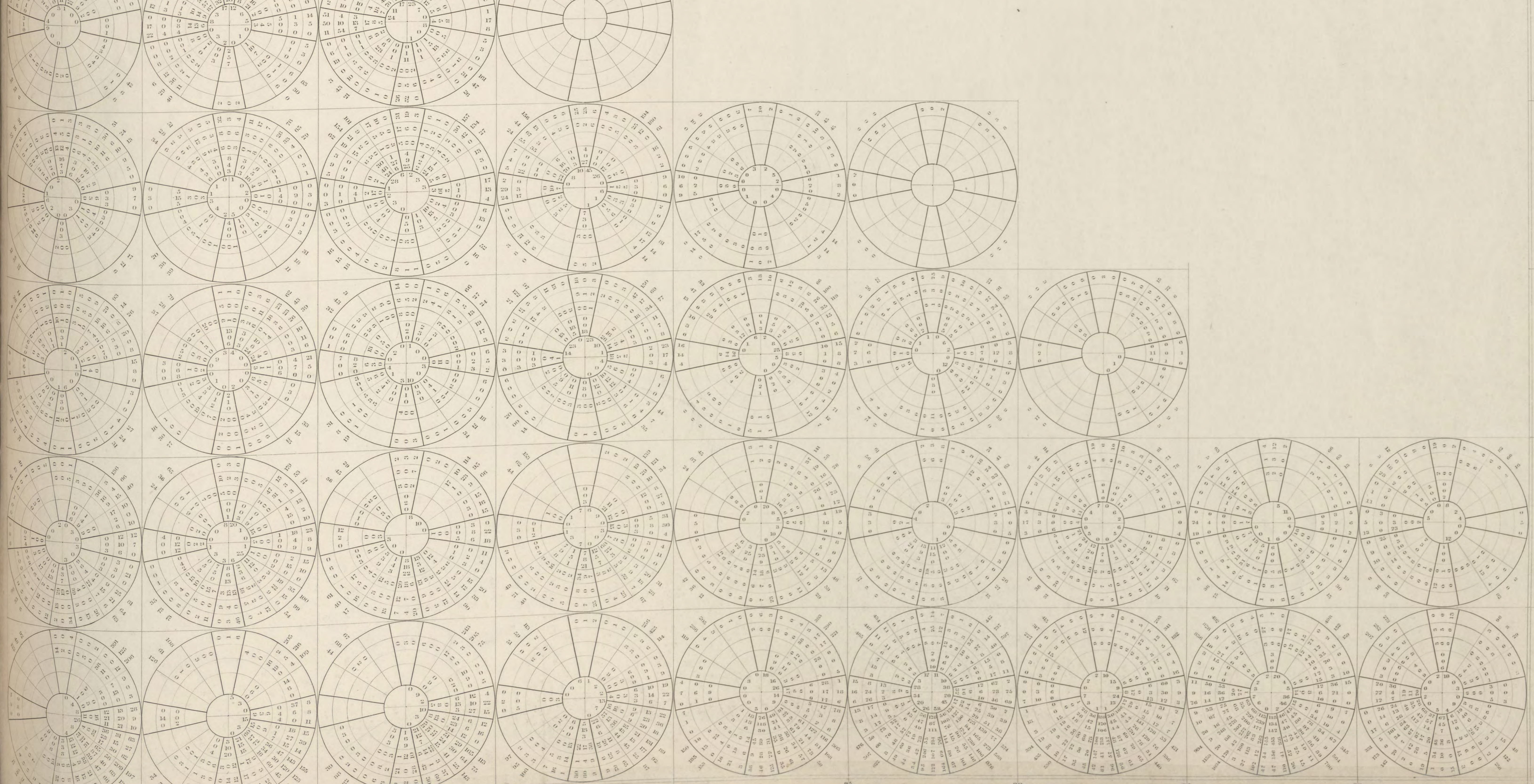


Diagram B.





UNITED STATES HYDROGRAPHICAL OFFICE
WIND AND CURRENT
CHART
OF THE
SOUTH ATLANTIC
BY
M. F. Maury, LL.D. Lieut. U. S. Navy.
Superind! of U.S.N. Observatory.
WASHINGTON.
Compiled from Materials in the Bureau of Ordnance and Hydrography
Commodore Charles Morris,
Chief of Bureau.
1852.
SERIES D. NO. 1.
EXPLANATION.
The figures are the temperatures of the water at the surface and at the place of observation, without any correction or error among the various Themometers used; (they were all Fahrenheit.)
The figures that stand thus (ᴙ) that is, those that are to be read from North to South as we stand at the West margin of the chart, are the observed temperatures for the Spring. Those in black, for March (the first month), those in blue, for April (the second month,) and those in red, for May (the last month.)
The figures that stand upside down, thus (01, or those which are to be read from East to West when we stand North side of the chart, show the Summer temperatures: that is: the black, for June; blue, for July; and red, for August.
The figures that stand thus, or those which have to be read from South to North as we stand on the East side of the chart, are the temperatures for Autumn. The black standing for the first (Sep.); the blue, for the second (Oct.), and the red, for the last (Nov.), month of the season.
The figures that stand thus (70), in the usual way, are for the Winter temperatures, ie, black, for Dec.; blue, for Jan.; and red, for Feb.
Thus it will be perceived that the position of the figures show the season; thus Spring, Summer, Autumn, Winter (70); and the color the month: that is, the first month of each season, as March, June, Sept. and Dec. has its temperatures in black; the second, as April, July, October, and January, in blue; and the last, as May, August, November and February, in red.
The isotherms are drawn for every 10° from 80° to 40° inclusive. These lines begin on the Western side of the chart, and as we follow them thence we are to understand — take the isotherm of 60° for example — that to the right of that line the temperature of the water is above 60°, and to the left side, below 60°.
As each of the four seasons is represented by an arrangement of figures peculiar to itself for the temperatures, so each is represented by a peculiar system of lines for its isotherms; thus, a continuous line represents the isotherm of 80°, and its color, the month. If it be black, it is for the first month of the season; if blue, for the second; and if red, the third. Thus the line ________ stands for 80° in Summer. If the line be black, it is the isotherm for 80° in June; if blue, it is for 80° in the month of July; and if red, it is the isotherm for 80° in August. The last month of each season being always in red, as the first is in black.
If the line be broken, thus __ __ __ it is the isotherm of 70°. Broken with one dot ___.___.___ it is for 60°, with two dots ___..___..___ it is for 50°, and with three dots ___...___...___ it is for 40°.
ISOTHERMS FOR THE FOUR SEASONS.
Temperatures and Isothermal lines For Spring.
For Summer
For Autumn.
For Winter.
80
70
60
50
40
1st month of each of the 4 seasons in Black.
2d do. Blue.
3d do. Red.
M. F. Maury Lt. U.S.N.
I. of Marajo
MARANHAM
SOUTH AMERICA
BRAZIL
URAGUAY
LA PLATA
RIO DE LA PLATA
Buenos Ayres
RIO DE JANEIRO
BAY OF Victoria ESPIRITO SANTO
Lagoa Grande de los Patos
Rio Grande de San Pedro
C. St. Antonio
May 80
Nov. 80
May 80
Feby. 80
Aug. 70
July 70
Sept. 70
Nov. 70
Oct. 70
June 70
May 70
Aug. 70
Dec. 70
April 70
Feby. 70
March 70
July 60
Aug. 60
Oct. 60
June 60
April 60
July 50
Aug. 50
Nov. 60
Sept. 60
March 60

MAURY'S
WIND & CURRENT CHART.
SOUTH ATLANTIC NO. 2. SERIES D.
POINT TOURO
C. St. Roque
Rio Grande do Norte
Parahyba
Pernambuco
C. St. Augustinho
Barra Grande
Port Calvo
Maceio
Rio St. Francisco
Ascension I.
Martin Vas
Trinidad
Sept. 80.
Oct. 80.
Nov. 80.
May 80.
July 80.
Jany. 80.
Dec. 80.
June 80.
Feby. 80.
April 80.
March 60.
July 70.
Sept. 70.
Oct. 70.
Aug. 70.
July 70.
June 70.
Nov. 70.
Dec. 70.
May 70.
Feby. 70.
Jany. 70.
April 70.
March 70.
Oct. 60.
July 60.
Aug. 60.
Sept. 60.
June 60.
Dec. 60.
May 60.
Tristan d' Acunha
Inaccessible I.
Nightingale I.

MAURY'S
WIND & CURRENT CHART.
SOUTH ATLANTIC NO. 3. SERIES D.
Temperatures and Isothermal lines — For Spring.
For Summer.
For Autumn.
For Winter.
1st month of each of the 4 seasons in Black.
2d do. Blue.
3d do. Red.
UNITED STATES HYDROGRAPHICAL OFFICE.
Lobito B.
Benguela
C. Cross
Walwich B.
St Helena
Annobona
Dec. 80.
Febr 80.
Aug. 70.
Sept. 70.
April 80.
March 80.
Nov. 70.
Oct. 70.
July 70.
June 70.
Decr 70.
Janr 70.
Febr 70.
March 70.
April 70.
May 70.
Sept. 60.
Aug. 60.
June 60.
July 60.
Oct 60.
May 60.
Dec. 60.
Nov 60.
April 60.
N A M A Q U A S
Table Bay
Cape of Good Hope

MAURY'S
WIND & CURRENT CHART.
SOUTH ATLANTIC No.4. SERIES D.
Temperatures and Isothermal lines — For Spring
For Summer
For Autumn
For Winter
1st month of each of the 4 seasons in Black.
2d do. Blue.
3d do. Red.
UNITED STATES HYDROGRAPHICAL OFFICE
Gulf of San Matias
BAY OF ST GEORGE
FALKLAND ISLANDS
TIERRA DEL FUEGO
STATEN I.
SOUTH SHETLAND
POWELLS GROUP
PALMERS LAND
Elephant Island
Clarence Island
Bransfields Strait
Hughes Bay
Falkland Sound
Port St Elena
Port Desire
Port San Julian
C. St. John
Strait of Le Maire
Oct. 50.
June 50.
May 50
April 50
July 40.
Aug 40
Jany 50.
Feby 50
Sept. 40.
Dec. 40
May 40
June 40.
April 40.
July 60
Jany 60.
March 60.
Sept. 60.
May 60
April 60
Dec. 60.
Sept. 50.
Aug. 50
Nov. 50
July 50
Feby 60
March 50.

A CHART
SHOWING THE FAVORITE RESORT
of the
SPERM AND RIGHT WHALE
BY
M. F. MAURY L. L. D. LIEUT. U. S. NAVY
Constructed from Maury's Whale Chart of the World
BY ROBT. H. WYMAN LIEUT. U. S. N.
by Authority of
Commo: Charles Morris U. S. N.
CHIEF OF BUREAU OF ORDNANCE AND HYDROGRAPHY
1853.
Red .... Sperm Whale.
Blue .... Right "
Purple .... Sperm and Right
EUROPE
ASIA
AFRICA
ARABIA
HINDOOSTAN
AUSTRALIA
MADAGASCAR
BORNEO
NEW GUINEA
NEW ZEALAND
RUSSIAN AMERICA
NORTH AMERICA
UNITED STATES
CANADA
LABRADOR
GREENLAND
GULF OF MEXICO
CARIBBEAN SEA
SOUTH AMERICA
PERU
BRASIL
BOLIVIA
PATAGONIA
FALKLAND IS.
SANDWICH ISLANDS
ALEOUTIAN ARCH.
KAMTSCHATKA
ALTA CALIFORNIA
MEXICAN
This sea has been but partially investigated
Antarctic Continent, as seen by Wilkes
East of Greenwich
West of Greenwich

WHALE CHART

OF

THE WORLD,

BY

M. F. Maury, LL.D. Lieut. U.S. Navy.

Superin'dt. of U.S.N. Observatory

WASHINGTON

Compiled from Materials in the Bureau of Ordnance and Hydrography

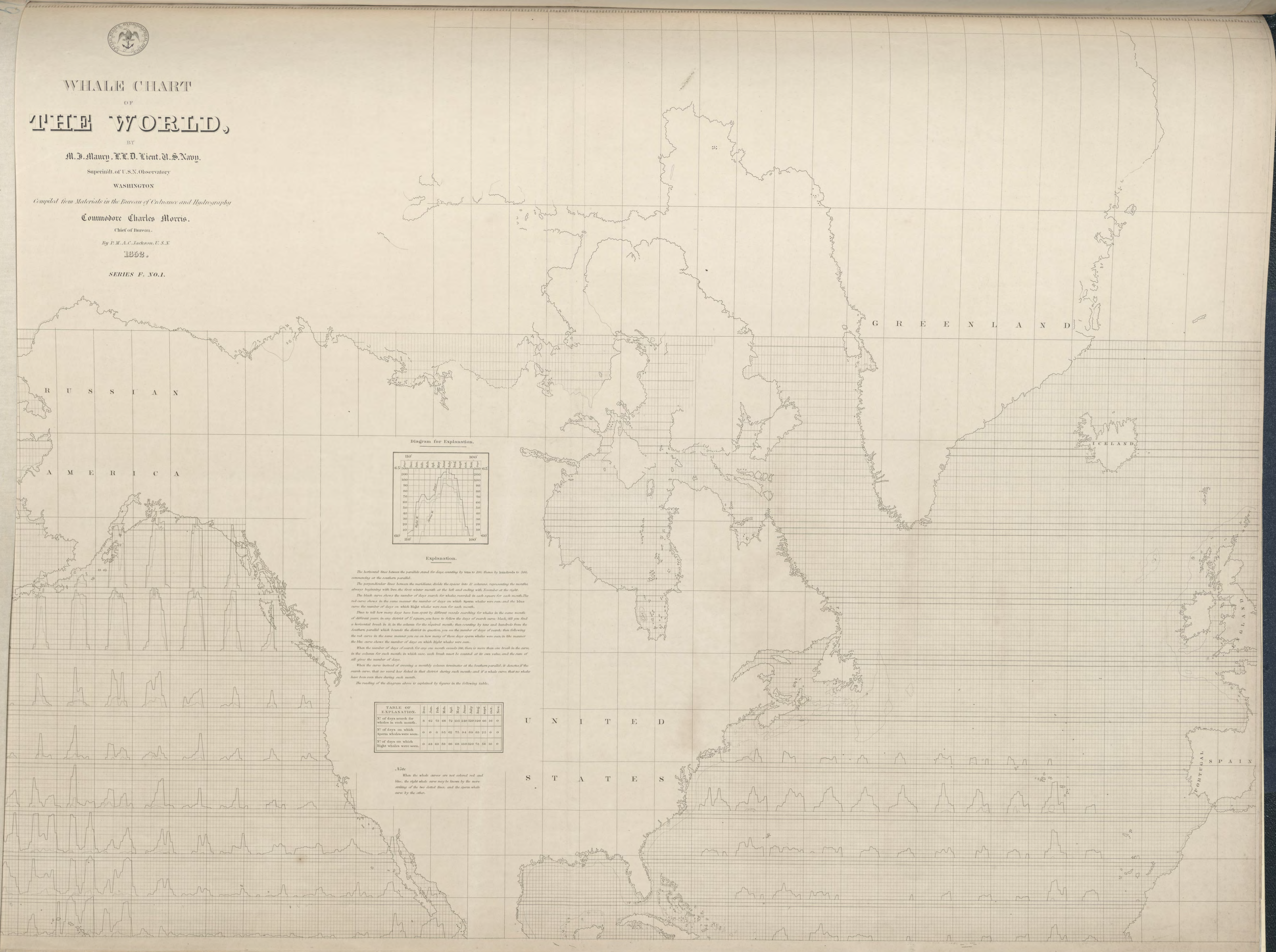
Commodore Charles Morris.

Chief of Bureau.

By P.M.A.C. Jackson, U.S.N.

1852.

SERIES F. NO.1.



Explanation.

The horizontal lines between the parallels stand for days, counting by tens to 100; thence by hundreds to 300, commencing at the southern parallel.

The perpendicular lines between the meridians, divide the spaces into 12 columns, representing the months, always beginning with Dec. the first winter month at the left and ending with November at the right.

The black curve shows the number of days search for whales, recorded in each square for each month. The red curve shows in the same manner the number of days on which Sperm whales were seen; and the blue curve the number of days on which Right whales were seen for each month.

Thus to tell how many days have been spent by different vessels searching for whales in the same month of different years, in any district of 5° square, you have to follow the days of search curve (black) till you find a horizontal break in it, in the column for the required month; then counting by tens and hundreds from the Southern parallel which bounds the district in question, you see the number of days of search; then following the red curve in the same manner you see how many of those days sperm whales were seen; in like manner the blue curve shows the number of days on which Right whales were seen.

When the number of days of search for any one month exceeds 300, there is more than one break in the curve, in the column for such month; in which case, each break must be counted at its own value, and the sum of all gives the number of days.

When the curve instead of crossing a monthly column terminates at the Southern parallel, it denotes, if the search curve, that no vessel has fished in that district during such month; and if a whale curve, that no whales have been seen there during such month.

The reading of the diagram above is explained by figures in the following table.

TABLE OF EXPLANATION.	Dec.	Jan.	Feb.	Mch.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.
N.º of days search for whales in each month.	8	62	73	66	72	135	240	520	320	66	16	0
N.º of days on which Sperm whales were seen.	0	0	8	35	62	75	94	89	83	25	0	0
N.º of days on which Right whales were seen.	0	48	63	59	66	68	130	320	78	56	10	0

Note

When the whale curves are not colored red and blue, the right whale curve may be known by the more striking of the two dotted lines, and the sperm whale curve by the other.

MAURY'S WIND & CURRENT CHART.

WHALE SHEET NO. 2. SERIES F.

Explanation.

The horizontal lines between the parallels stand for days, counting by tens to 100; thence by hundreds to 500 commencing at the southern parallel.

The perpendicular lines between the meridians, divide the space into 12 columns, representing the months, always beginning with Dec. the first winter month at the left and ending with November at the right.

The black curve shows the number of days search for whales, recorded in each square for each month. The red curve shows in the same manner the number of days on which Sperm whales were seen, and the blue curve the number of days on which Right whales were seen for each month.

Thus; to tell how many days have been spent by different vessels searching for whales in the same month of different years in any district of 5° square you have to follow the days of search curve (black) till you find a horizontal break in it, in the column for the required month; then counting by tens and hundreds from the Southern parallel which bounds the district in question, you see the number of days of search; then following the red curve in the same manner you see on how many of those days sperm whales were seen; in like manner the blue curve shows, the number of days on which Right whales were seen.

When the number of days of search for any one month exceeds 300, there is more than one break in the curve, in the column for such month; in which case, each break must be counted at its own value, and the sum of all gives the number of days.

When the curve instead of crossing a monthly column terminates at the Southern parallel, it denotes, if the search curve, that no vessel has fished in that district during such month; and if a whale curve, that no whales have been seen there during such month.

The reading of the diagram above is explained by figures in the following table.

TABLE OF EXPLANATION.	Dec.	Jan.	Feb.	Mch.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.
N° of days search for whales in each month.	25	58	53	68	86	75	96	130	245	100	80	42
N° of days on which Sperm whales were seen.	4	7	18	26	51	54	67	77	88	56	26	4
N° of days on which Right whales were seen.	15	33	27	30	45	39	42	50	55	69	65	34

Note

When the whale curves are not colored red and blue, the right whale curve may be known by the more striking of the two dotted lines, and the sperm whale curve by the other.

Explanation.

The horizontal lines between the parallels stand for days, counting by tens to 100; thence by hundreds to 300, commencing at the southern parallel.

The perpendicular lines between the meridians, divide the spaces into 12 columns, representing the months always beginning with Dec. the first winter month at the left and ending with November at the right.

The black curve shows the number of days search for whales, recorded in each square for each month. The red curve shows in the same manner the number of days on which Sperm whales were seen; and the blue curve the number of days on which Right whales were seen for each month.

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When the curve instead of crossing a monthly column terminates at the Southern parallel, it denotes, if the search curve, that no vessel has fished in that district during such month; and if a whale curve, that no whales have been seen there during such month.

The reading of the diagram above is explained by figures in the following table.

TABLE OF EXPLANATION.	Dec.	Jan.	Feb.	Mch.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.
No. of days search for whales in each month.	65	88	78	98	210	120	540	300	310	615	240	93
No. of days on which Sperm whales were seen.	9	17	15	34	53	42	64	67	82	97	73	52
No. of days on which Right whales were seen.	3	25	21	45	35	32	43	75	65	73	33	28

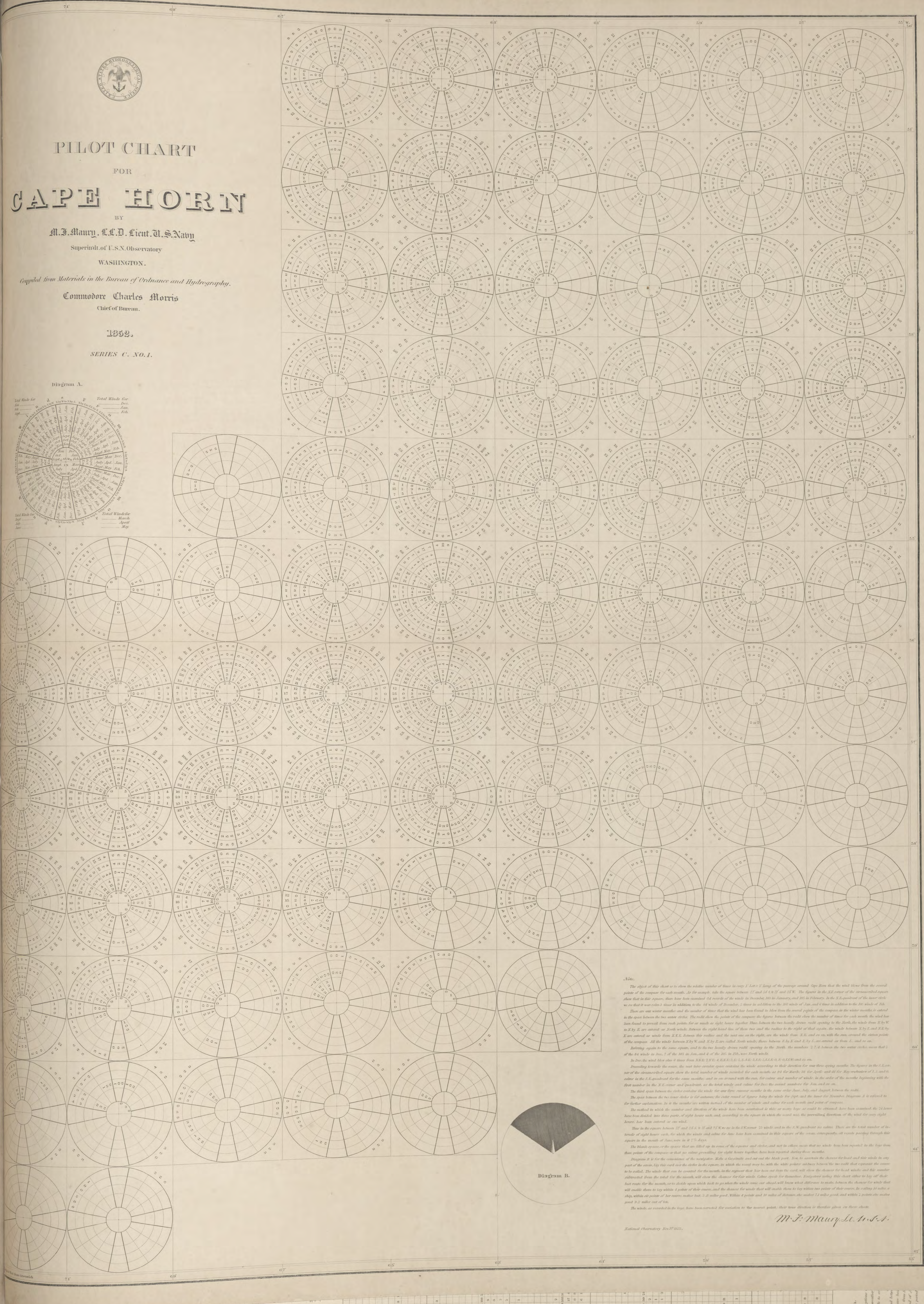
Note

When the whale curves are not colored red and blue, the right whale curve may be known by the more striking of the two dotted lines, and the sperm whale curve by the other.

MAURY'S WIND & CURRENT CHART.

WHALE SHEET NO. 3 SERIES F.

ENT CHART.
Diagram for explanation.
Explanation.
SIAM
CEYLON
MINDANAO
SUMATRA
BORNEO
CELEBES
JAVA
NEW GUINEA
NEW HOLLAND
VAN DIEMAN'S LAND
NEW ZEALAND
ANTARCTIC CONTINENT



PILOT CHART
FOR
CAPE HORN

BY

M. F. Maury, LL.D. Lieut. U.S. Navy
Superin'dt. of U.S.N. Observatory
WASHINGTON.

Compiled from Materials in the Bureau of Ordnance and Hydrography.

Commodore Charles Morris
Chief of Bureau.

1852.

SERIES C. NO. 1.

Diagram A.

Diagram B.

Note.

The object of this chart is to show the relative number of times in every 1° Lat. × 2° Long. of the passage around Cape Horn that the wind blows from the several points of the compass for each month. As for example, take the square between 57° and 58° S. & 71° and 73° W. The figures in the N.E. corner of the circumscribed square show that in this square, there have been examined 84 records of the winds in December, 103 in January, and 105 in February. In the N.E. quadrant of the inner circle we see that it was calm 3 times in addition to the 84 winds of December, 5 times in addition to the 103 winds of Jan., and 6 times in addition to the 105 winds of Feb.

These are our winter months; and the number of times that the wind has been found to blow from the several points of the compass, in the winter months, is entered in the space between the two outer circles. The radii show the points of the compass; the figures between the radii show the number of times for each month the wind has been found to prevail from such points, for as much as eight hours together. Thus, between the two heavily drawn radii opening to the North, the winds from N. by W. to N. by E. are entered as North winds. Between the right hand line of these two and the radius to the right of that again, the winds between N. by E. and N.E. by N. are entered as winds from N.N.E. Between this radius and the next one on the right, are the winds from N.E. and so on, with the sun, around the sixteen points of the compass. All the winds between N. by W. and N. by E. are called North winds; those between E. by N. and E. by S., are entered as from E., and so on.

Referring again to the same square, and to the two heavily drawn radii opening to the North, the numbers 2. 7. 4. between the two outer circles, mean that 2 of the 84 winds in Dec., 7 of the 103 in Jan., and 4 of the 105 in Feb., were North winds.

In Dec. the wind blew also 6 times from N.N.E; 2 N.E; 4 E.N.E; 3 E; 5 E.S.E; 3 S.E; 5 S.S.E; 0 S; 0 S.S.W; and so on.

Proceeding towards the centre, the next inter-circular space contains the winds according to their direction for our three spring months. The figures in the S.E. corner of the circumscribed square show the total number of winds recorded for each month; as 94 for March; 98 for April; and 46 for May; exclusive of 1. 3. and 0. calms in the S.E. quadrant for the same months, and so on around with the sun, for calms and number of winds, in the order of the months beginning with the first number in the N.E. corner and quadrant, as the total winds and calms for Dec; the second numbers for Jan. and so on.

The third space between the circles contains the winds for our three summer months in the same order June, July, and August, between the radii.

The space between the two inner circles is for autumn; the outer round of figures being the winds for Sept. and the inner for November. Diagram A is referred to for further explanation. In it the months are written instead of the number of winds and calms for each month and point of compass.

The method in which the number and direction of the winds have been ascertained is this: as many logs as could be obtained have been examined, the 24 hours have been divided into three parts, of eight hours each, and, according to the square in which the vessel was, the prevailing direction of the wind for every eight hours, has been entered as one wind.

Thus in the square between 57° and 58° S. & 71° and 73° W. we see in the S.W. corner 23 winds, and in the S.W. quadrant no calms. These are the total number of intervals of eight hours each, for which the winds and calms for June have been examined in this square of the ocean; consequently, all vessels passing through this square in the month of June, were in it 7⅔ days.

The blank spaces, or the spaces that are filled up in some of the squares and circles, and not in others, mean that no winds have been reported in the logs from these points of the compass; or that no calms prevailing for eight hours together, have been reported during those months.

Diagram B is for the convenience of the navigator. Make a fac-simile and cut out the black part. Now, to ascertain the chances for head and fair winds in any part of the ocean, lay this card over the circles in the square, in which the vessel may be, with the white pointer midway between the two radii that represent the course to be sailed. The winds that can be counted for the month, in the segment that has been cut from the card, will show the chances for head winds; and this number subtracted from the total for the month, will show the chances for fair winds. Calms speak for themselves. Navigators using this chart either to lay off their best route for the month, or to decide upon which tack to go, when the winds come out ahead, will know what difference to make, between the chances for winds that will enable them to lay within 4 points of their course, and the chances for winds that will enable them to lay within two points of their course. In sailing 10 miles, a ship, within six points of her course, makes but 3.8 miles good. Within 4 points and 10 miles of distance, she makes 7.1 miles good, and within 2 points, she makes good 9.2 miles out of ten.

The winds, as recorded in the logs, have been corrected for variation to the nearest point; their true direction is therefore given on these sheets.

M. F. Maury Lt. U.S.N.

National Observatory Nov. 1st 1852.

UNITED STATES HYDROGRAPHICAL OFFICE.
PILOT CHART
CAPE HORN
by Lieut. M.F. Maury. U.S. Navy.
National Observatory. Washington.
SHEET 2.
1852.
SERIES C.
For Explanation see Diagram A. and sheet No. 117.
Total Winds for Nov. Oct. Sept.
Total Winds for Dec. Jan. Feb.
Diagram A.
Diagram B.
Explanation.

STORM AND RAIN
CHART
OF THE
SOUTH ATLANTIC
BY
M. F. Maury. LL.D. Lieut. U.S. Navy.
Superin'dt. of U.S.N. Observatory.
WASHINGTON.
Compiled from Materials in the Bureau of Ordnance and Hydrography
Commodore Charles Morris.
Chief of Bureau
by Lieuts. John Julien Guthrie, John C. Beaumont & Pass.d Mid.n Dulany A. Forrest, U.S.N.
1854.
SERIES E.
Explanation.
The object of this chart is to show the exceptions to the general prevailing condition of the weather at sea; and to determine for each month in every district the quarter from which Storms are most liable to occur.
Thus for example, between the parallels of 55° and 60° South Lat. and the meridians of 65° and 70° West Long. we have recorded for the month of March 1 Gale from the N. 1 from N.E. 1 from E. 3 from S.E. 20 from South. 74 from S.W. 35 from W. 35 from N.W. 29 Calms, 94 Rains, 2 Thunders and 16 Fogs during a period of 642 observations of eight hours each, or of 214 Days.
The direction of the gales is that given by Compass not corrected for variation.
Under the head of Rains are included Hail, Snow and Sleet.
Lightning is included under the head of Thunder.
Three observations have been made for each day, in order therefore to see how many days have actually been discussed, divide by three the number which stands in the column for each month, on the line marked days.

Series B.

WIND AND CURRENT CHARTS.

MONSOON & TRADE WIND CHART OF THE INDIAN OCEAN,

BY

M. F. MAURY, L.L.D. COM^D U. S. N.

Superintendent of U. S. N. Observatory

WASHINGTON.

COMPILED BY

Lieut^s. J. J. Guthrie, H. S. Newcomb, N. H. Van Zandt, E^d. C. Stout, T. T. Houston, and projected by L^t. R. L. May

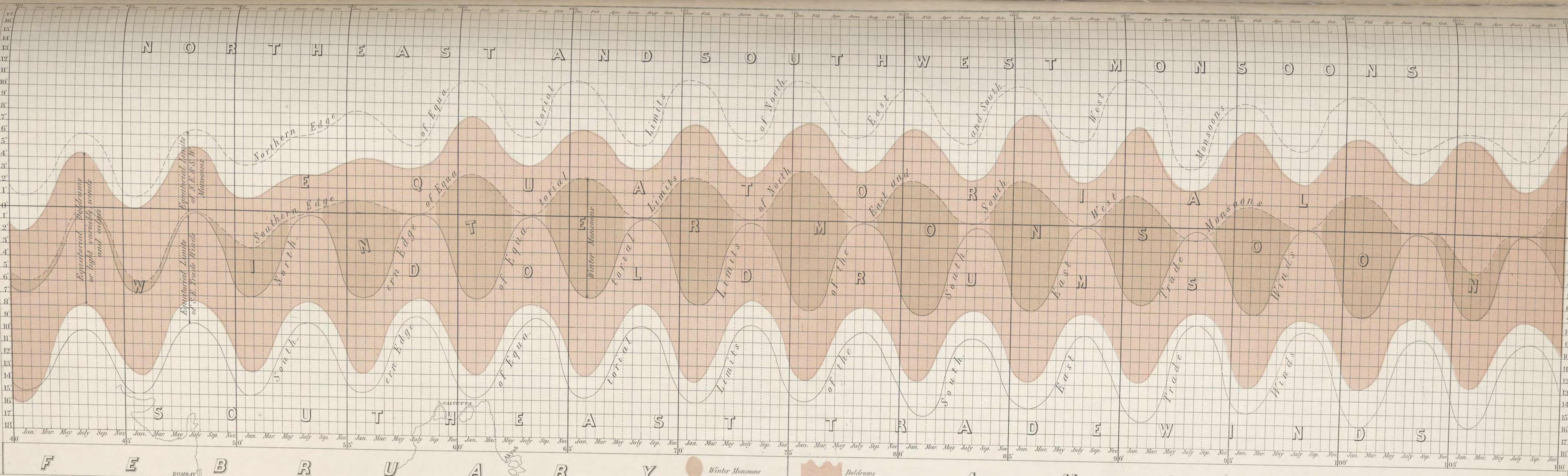
from materials in the

BUREAU OF ORDNANCE AND HYDROGRAPHY,

CAPTAIN D. N. INGRAHAM,

CHIEF OF BUREAU.

1859.



EXPLANATION.

This Chart expresses the results of 16914 seperate Observations: 1833 for February, 6733 for August, and 2048 for the general Chart. One observation embracing a period sometimes of several days, and each one it self being the mean of several.

The winds of this Ocean undergo such great, so many, and such regular changes according to the seasons, that it has been found very difficult to map them. On this account, I have selected February and August as the characteristic months for the two seasons. The clear red represents the breadth and position of the doldrum belt for each month, the brownish does the same for the winter monsoons.

The Equatorial limits of the S.E. trade winds are generally found between the two lower curves, "Southern Edge" and "Northern Edge." In the white space between the clear red and lower curve, the S.E. trade wind is found oftener than the "Doldrums." Hence this belt is left white, as characteristic of the trades. The same remarks apply to the upper pair of curves, &c.

It often happens, as the August Chart shows, that the S.E. trade gradually passes into the S.W. monsoon without any intervening calm belt. So likewise both the N.E. and S.E. trades will pass into the westerly or winter monsoon, without an intervening calm; the former hauling around by the North, the latter by the South.

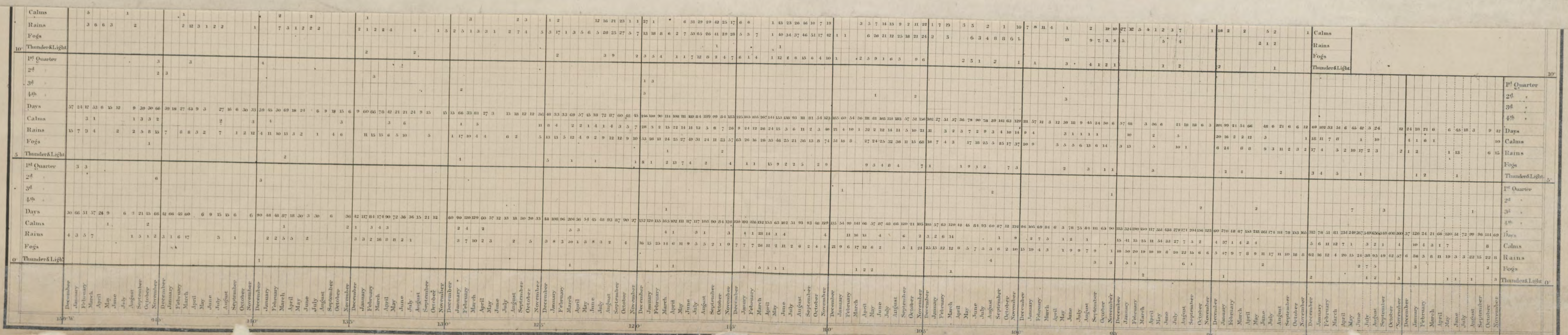
In winter on the contrary, such changes as these are often found to occur viz: first,_ going south as from Calcutta._ Your ship passes through the N.E. trade. then a calm belt,_ then a N.W. wind,_ then a calm belt,_ then a west wind._ then a calm belt,_ then a wind from the S.W._ then another streak of light airs and calms,_ and lastly, she enters the S. E. trades.

This Chart however is intended to represent only the Prevailing character of the winds;_ See how the S.W. Monsoons are deflected in August by the India Peninsula. Observe also_ in the clear red_ that in the summer and fall months, the curve representing the Equatorial limits of the S.E. trade winds, and of the N.E. and S.W. monsoons often touch. The reason of this is: Ships often in Summer and fall pass from one of these systems of winds into the other without any intervening calm belt.

The belt of winter monsoons is deflected in a remarkable manner towards the South, as you approach the African Coast. These winds are a study. They are suggestive of marked peculiarities in the climatology of Equatorial Africa. Indeed, the question may well be asked, why should these winter monsoons blow from the West instead of from the East? And why should they not be as well marked between the Trades of the Pacific, as they are between the Trades of the Indian Ocean?

Observatory, Washington
January 1860.

M. F. Maury



STORM AND RAIN CHART

OF THE

NORTH PACIFIC. SHEET 1

BY

M. F. Maury, L.L.D. Commander U.S. Navy.

Superin'd't of U. S. N. Observatory

WASHINGTON.

Compiled from Materials in the Bureau of Ordnance and Hydrography

Captain D. N. Ingraham

Chief of Bureau

by Lieuts. James D. Johnston and A. F. Warley U.S. Navy.

1860.

SERIES E

NOTE

Gales are divided into those from

1st Qr. from N(inc.) to E.
2d Qr. from E(inc.) to S.
3d Qr. from S(inc.) to W.
4th Qr. from W(inc.) to N.
} marked on their appropriate lines

Hail, Sleet and Snow marked as Rain.

Explanation

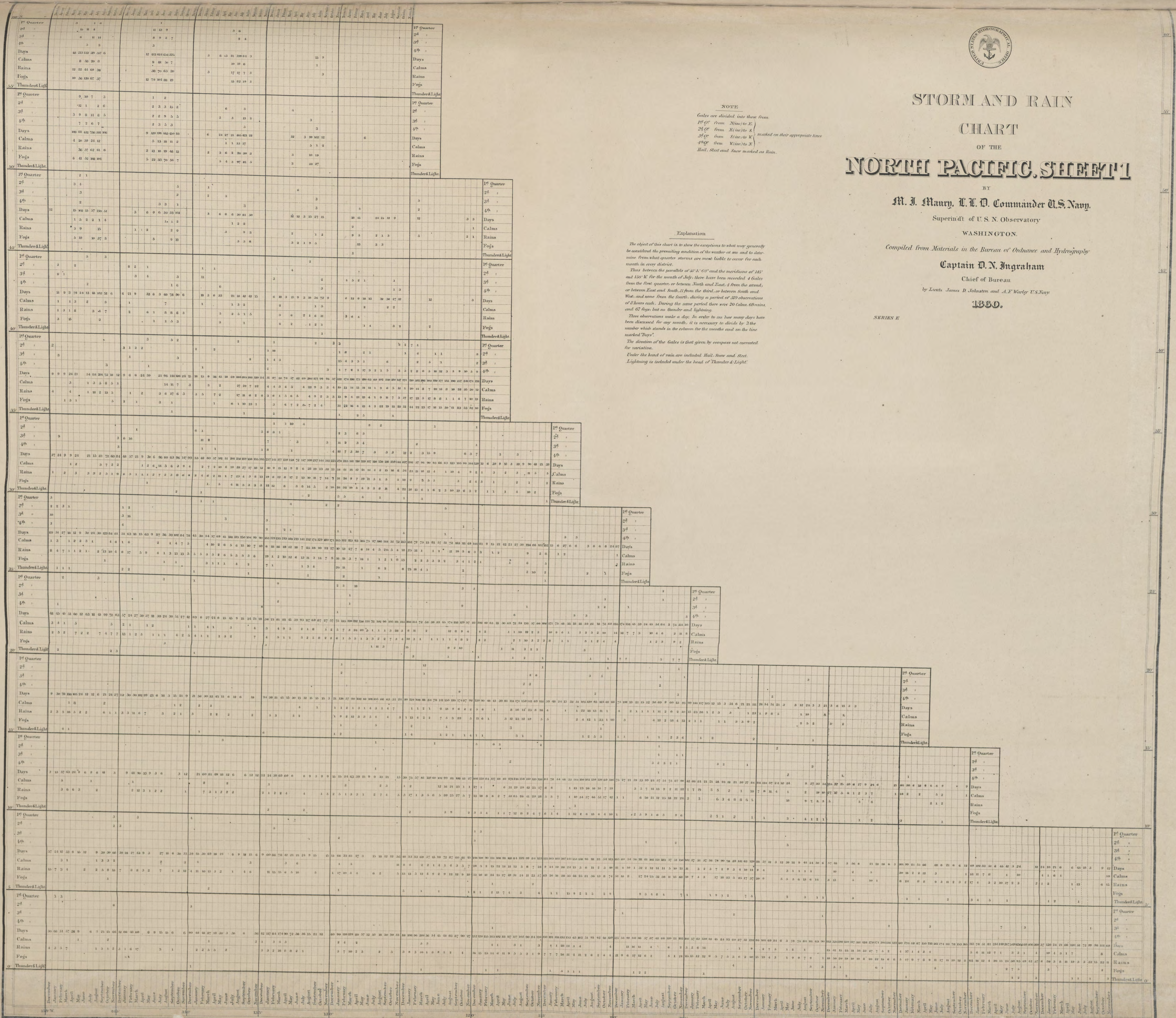
The object of this chart is, to show the exceptions to what may generally be considered the prevailing condition of the weather at sea and to determine from what quarter storms are most liable to occur for each month in every district.

Thus between the parallels of 55° & 60° and the meridians of 145° and 150° W. for the month of July, there have been recorded 4 Gales from the first quarter, or between North and East, 4 from the second, or between East and South, 11 from the third, or between South and West, and none from the fourth, during a period of 519 observations of 8 hours each. During the same period there were 20 Calms, 69 rains, and 67 fogs, but no thunder and lightning.

Three observations make a day. In order to see how many days have been discussed for any month, it is necessary to divide by 3 the number which stands in the column for the months and on the line marked "Days".

The direction of the Gales is that given by compass not corrected for variation.

Under the head of rain are included Hail, Snow and Sleet. Lightning is included under the head of "Thunder & Light."



STORM AND RAIN CHART

OF THE

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1860.

SERIES E

NOTE

Gales are divided into those from

1st Qr from N (inc.) to E. }
2d Qr from E (inc.) to S. } *marked on their appropriate lines*
3d Qr from S (inc.) to W. }
4th Qr from W (inc.) to N. }

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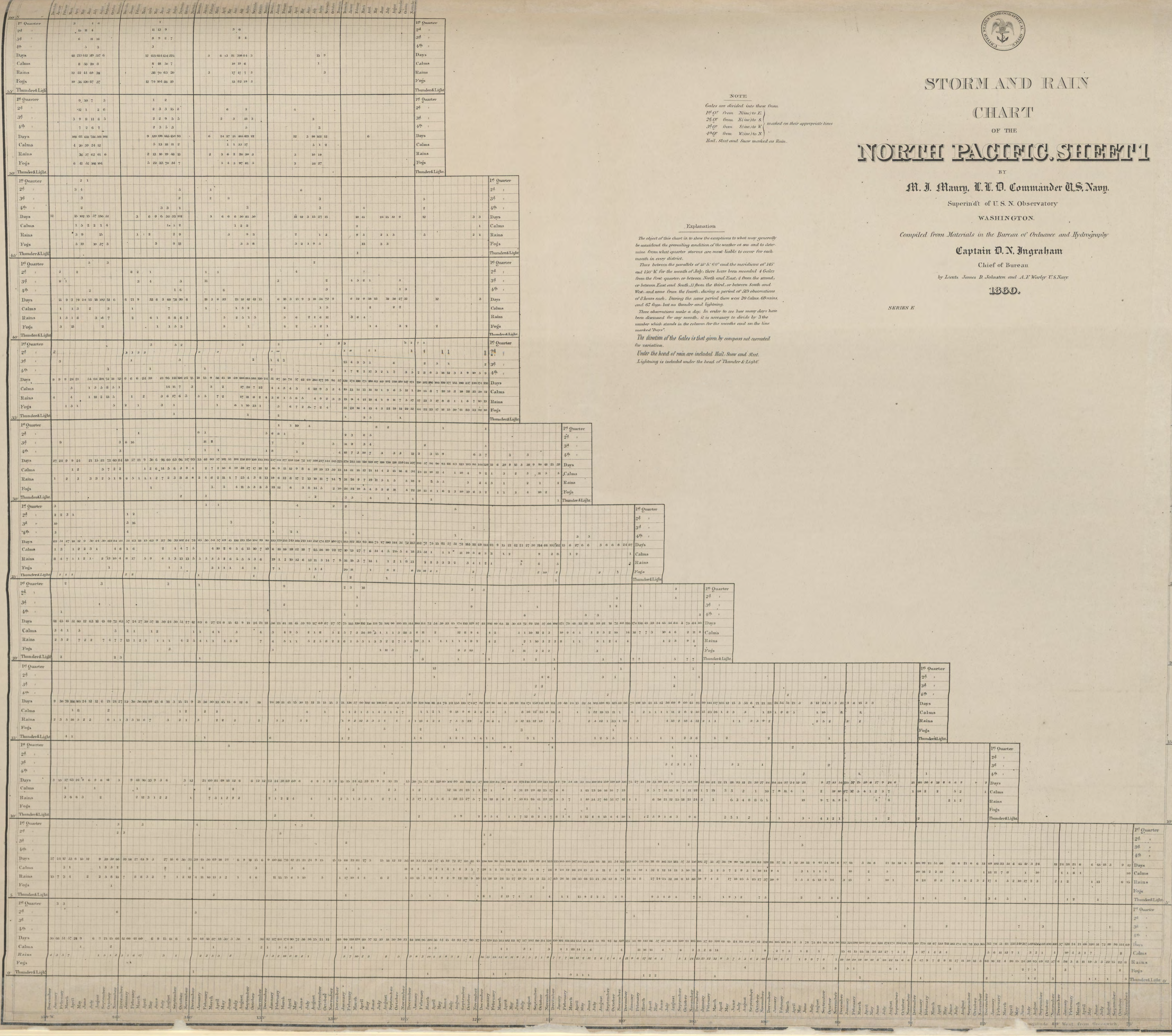

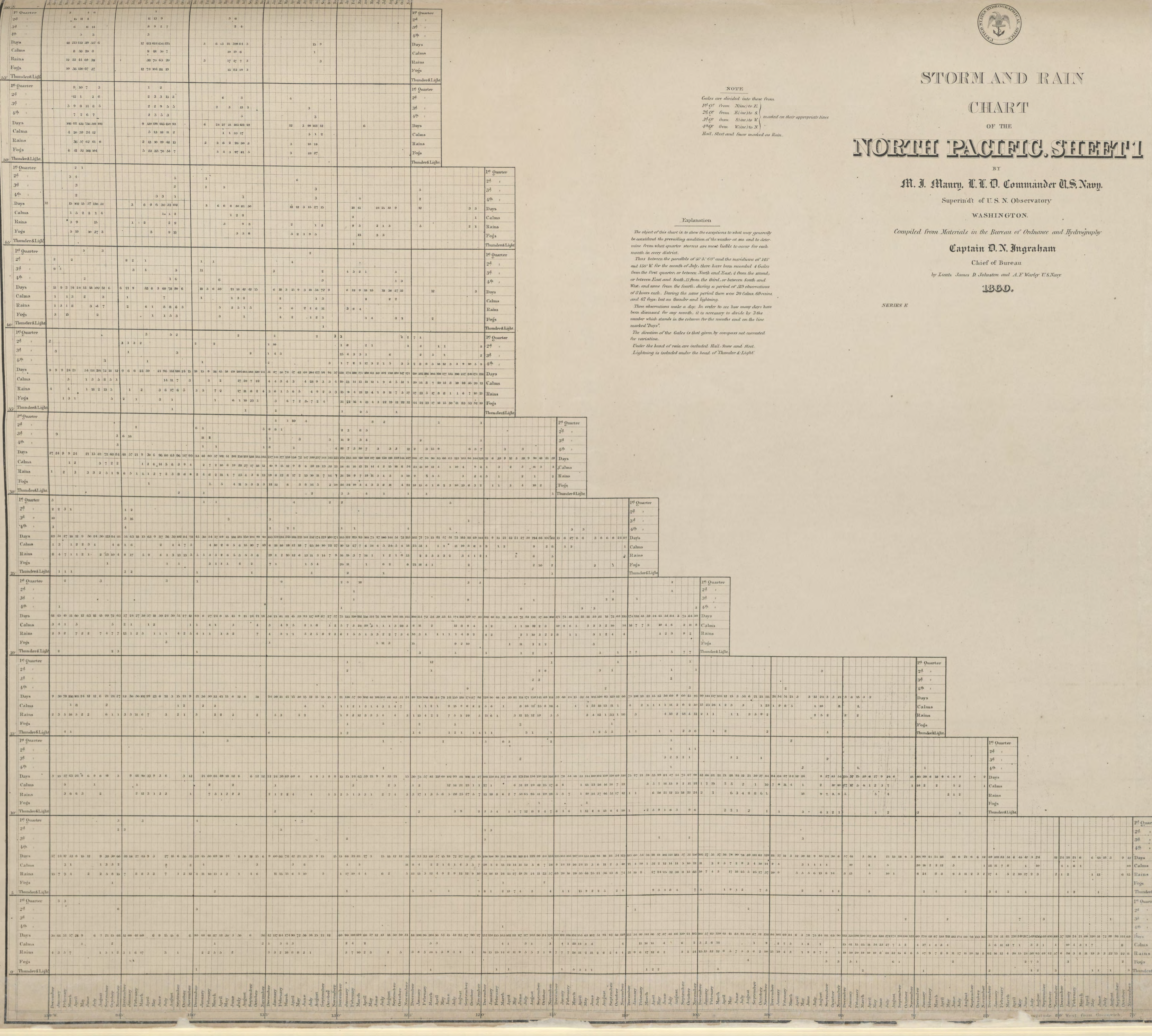

STORM AND RAIN CHART OF THE NORTH PACIFIC. SHEET 1

BY

M. F. Maury, L.L.D. Commander U.S. Navy.

Superin'd't of U. S. N. Observatory

WASHINGTON.

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1860.

SERIES E

NOTE

Gales are divided into those from

1st Qr.	from	N.(inc.) to E.	marked on their appropriate lines
2d Qr.	from	E.(inc.) to S.	
3d Qr.	from	S.(inc.) to W.	
4th Qr.	from	W.(inc.) to N.	

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Series B.

WIND AND CURRENT CHARTS.

TRADE WIND CHART OF THE ATLANTIC OCEAN,

BY

M. F. MAURY, L.L.D. LIEUT. U.S.N

Superintendent National Observatory.

COMPILED BY

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from Materials in the Bureau of Ordnance and Hydrography

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EXPLANATION.

The horizontal lines are parallels of Latitude. The heavy vertical lines are meridians for every even 5°&10° of Longitude. The 12 vertical columns between the meridians show the months, commencing always with December the first Winter Month. Beginning with the top of the Chart, the figures on the Red Ground show the region of Calms, known as the Horse Latitudes, which border the Polar Edge of N.E. trade winds.

The figures on the blue ground show the Northern and the Southern limits of the N.E. trade winds. The figures on the Red ground below the blue show the region of the Equatorial Calms. The figures on the Purple ground show the Northern and the Southern Limits of the Monsoons that are found to blow in the Equatorial regions of the Atlantic and towards the Coast of Africa.

The figures on the Blue ground below the Purple, show the region which is covered by the S.E. trade winds for any month; and the figures on the lowest Red ground show the regions bordering on the Polar Edge of S.E. trades that are liable to calms.

Thus suppose a vessel bound hence to the Equator in the Months of July and August wishes to know where she will be most liable to be becalmed in the "Horse Latitudes" where to find the N.E. trades; where to loose them; where to find the Equatorial Calms &c. &c.

Let the Ship be in the region of Horse Latitudes between the meridians of 40° and 45°W. She will observe that 45 Vessels have in various years, between these two Meridians and in July encountered these calms. Viz: 3 between Latitudes 37° and 38°; 3 between 35° and 36°; 7 between 34° and 35°; 3 between 33° and 34°; 12 between 32° and 33°; 4 between 31° and 32 and so on to the parallel of 25° below which none of these calms are found in July and between these Meridians.

Between the meridians of 35° and 40°; she will see that 17 vessels have found the polar edge of the N.E. trades in the month of July, of various years; of which 2 found these winds between Lat. 33° and 34°; 2 between 32° and 33°; 2 between 31° and 32°; 3 between 30° and 31°; 3 between 29° and 30°; and so on, but none below 25°N. between these meridians.

Now in August, between the meridians of 25° and 30°; she would see that we have the observations of 31 vessels in various years during this month: and supposing the vessel to be still going south, she would observe that of those 31 vessels, 3 of them lost the N.E. trade winds between Lat: 16° and 17°N; 8 between 14° and 15°; 3 between 13° and 14°; 8 between 12° and 13° and so on; not one vessel carrying them below the parallel of 9° between these meridians in this month; whereas in the month of March between the same Meridians I carried the N.E. trades to the Equator; 3 to 1°N; 8 to 2°N. and so on.

But to return to the month of August, and the imaginary vessel: where the 31 vessels above refered to lost the N.E. trades, she encountered the Equatorial calms (Red ground) We have the record of vessels that were becalmed 50 days in August of various years and between the meridians of 25° and 30°. Of these, 1 found the Equatorial calms as high up as 15°; 4 as high up as 14°; 9 as high as 13°; 9 as high as 12°; 9 as high as 11°; 8 as high as 10°; 6 as high as 9°; and 4 as low down as 8°N.; but none nearer to the Equator. Clearing these calms she would then perceive by the Chart, that in August and between the Meridians of 25° and 30°; she would be liable to the Southwesterly Monsoons (figures on Purple ground) from 13°N to the Equator. Clearing these, she would next come to the S.E. trade winds, the Equatorial and Polar limits of which are also designated by the figures on the Blue ground, below the Purple.

Each belt or zone of Winds and Calms has an Equator on the Chart of its own e.g. In Sept^r between the Meridians of 30° and 35°; 3 Vessels report the Equatorial Limits of the N.E. trade winds to be between the parallels of 11° and 12°N. Where these Winds cease to blow, the Equatorial Calms were encountered and the 3 vessels report also 3 calms between the same parallels. Red ground.

It will be observed that the Purple does not include all the Monthly columns; the reason of this is that these Monsoons do not blow except in the months the columns for which bear the Purple.

January 1851. Reprinted April 1858.

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